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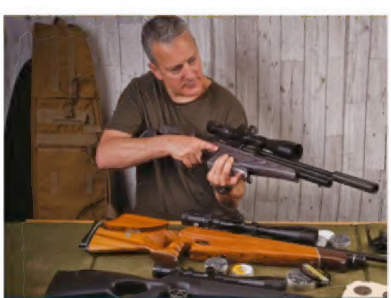
Future BOOKAZINE

The ULTIMATE AIRGUN *Handbook*

YOUR GUIDE TO MORE ENJOYABLE AND ACCURATE AIRGUN SHOOTING



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GETTING STARTED



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AIRGUN SHOOTER *presents*

The ULTIMATE AIRGUN *Handbook*

Whether you're a target shooter or hunt quarry on a permission, and whether you're new to shooting or it's been part of your life for years, this guide is for you. Across five themed sections, our expert tips and techniques will show you how to choose the right airgun and other equipment; how to look after your gear; and how to hit the target more consistently. Put more simply, *The Ultimate Airgun Handbook* will help you enjoy your airgun shooting more.

Want even more airgun advice? This handbook is brought to you by the makers of *Airgun Shooter* and other great shooting magazines. Find *Airgun Shooter* where you bought this handbook, or visit the Field Sports section of www.myfavouritemagazines.co.uk to see our full line-up.



Mike Morton, Editor-in-Chief
mike.morton@futurenet.com

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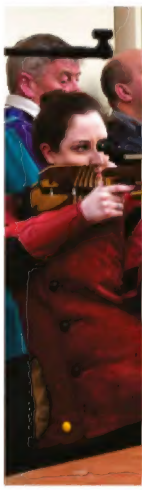
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The ULTIMATE AIRGUN *Handbook*

Future Publishing Ltd
Richmond House
33 Richmond Hill
Bournemouth
Dorset BH2 6EZ
☎ +44 (0) 1202 586200

Editorial
Editor in Chief **Mike Morton**
Handbook Editor **Richard Hill**
Art Editor **Steven Mumby**
Editor In Chief, Bookazines **Jon White**
Senior Art Editor **Andy Downes**

Advertising
Media packs are available on request
Commercial Director **Clare Dove**
clare.dove@futurenet.com

International
International Licensing Director **Matt Ellis**
matt.ellis@futurenet.com

Circulation
Head of Newstrade **Tim Mathers**
01202 586417

Production
Head of Production US & UK **Mark Constance**
Production Managers **Keely Miller, Nola Cokely, Vivienne Calvert, Fran Twentyman**
Production Project Manager **Clare Scott**
Advertising Production Manager **Joanne Crosby**
Digital Editions Controller **Jason Hudson**

Management
Managing Director **Aaron Asadi**
Editorial Director **Paul Newman**
Art & Design Director **Ross Andrews**
Head of Art & Design **Greg Whitaker**
Commercial Finance Director **Dan Jotcham**

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William Gibbons, 26 Planetary Road, Willenhall, West Midlands, WV13 3XT

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100 TOP TIPS

The Ultimate Airgun Handbook **team shares our top 100 tips, tricks and techniques to help make your shooting more successful and enjoyable**



PREPARATION

WITH JONATHAN YOUNG

1 CHECK YOUR PELLETS

Examine your pellets before any serious use. Pellet manufacture is a rapid industrial process, and lead is fragile. Tipping out the tin into an old sieve then shaking them onto an old kitchen towel will make pre-sorting easy. Look for swarf – small lead fragments. Next, check the skirt of each pellet, which is the most fragile area and prone to damage.



2 PACK A SHOWER CAP!

Keep a shower cap in your pocket – one of those elasticated disposable types. It can be stretched over your scope or valuable NV kit if you're ever caught out in the rain.

3 HAVE TOOLS READY

Keep a small screwdriver and some specific Allen keys in the appropriate sizes for your silencer and scope mounts within easy reach when you're out shooting. You just never know when you'll need to tighten something up.

4 PACK A PELLET-SIZER

Use a pellet-sizer to form damaged pellet skirts back into shape. Most pellet-sizers are for a particular calibre, but some are variable, and you can use these to reset the outer width of the skirt to a different diameter. Ingenious!

5 WATCH OUT FOR THE WET

Rainwater gets everywhere, and a quick exterior wipe is not always enough. Once in a while, remove your airgun's stock from its action, then clean down and lightly wipe the steel with an oily rag.

FIND THE BEST PELLETS FOR YOUR GUN

6 Your gun may perform OK with most pellets, very badly with some and brilliantly with one or two. Whether target shooting or hunting, test your gun with different pellets. For hunting, concentrate on dome-headed types first. Buy a selection and select a handful of undamaged pellets from each tin. Use a target card and change it for each type of pellet tested. You will quickly see the pellet that works best in your gun. It's so simple.





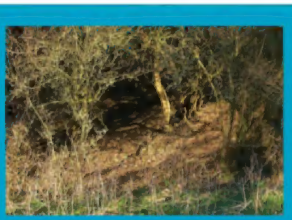
7 TRY A RIFLE SLING

Rifle slings free up your hands. Some guns are pre-fitted with sling studs, but if none are present and if, like me, you cannot draw a straight line on paper, ask your club or shop gunsmith to fit them for you.



8 CHRONO YOUR AIRGUNS

Buy a chronograph and a digital pellet scale, and learn how to chrono your airguns. Apart from being responsible for the legality of your guns' power output, it's fun to use these to compare pellets.



9 MEASURE UP

On a new permission, go for a recce beforehand. See where pigeons land in the vicinity and pace out distances from your shooting points to various branches and perches. Make a sketch showing lines of fire and the distances.



10 STOCK SOME SEED

Try drawing out your quarry with some scattered seed. Scatter it under tree perches or on rabbit runs to draw your quarry nearer and within range of your shooting spot. If you've already measured the distance, you'll be ready for action.

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CLOTHING

WITH SIMON EVERETT

GET HATS FOR ALL SEASONS



11 There is no definitive answer to the hat decision: you need several for different occasions. For plinking and target shooting in the field, a baseball cap is fine. In cold weather, a woollen or thermal beanie is a good choice, but they offer no shading for the eyes. A peak or brim can make a big difference to your sight picture. For hunting I prefer a wide brimmed hat. In hot weather, wet your hat and shake off the excess: the evaporation will help keep your head cool, and you will shoot better as a result.



COVER YOUR FACE

12 A scarf can be used to cover your face and make you less visible to quarry, but your breath will steam up your scope. A thin face veil is a far better proposition and works exactly the same. The fine mesh ones are also midge-proof, but they allow your breath to dissipate and don't steam up your sight.

13 USE BASE LAYERS

If you are cold, if not necessarily shivering, your muscles will be tense and your senses will be impaired, as will your reactions and thought processes; consequently your shooting will suffer. Thick woollens reduce your mobility and ability to take up a position, but modern base layers provide excellent insulation and thermal qualities without restricting your movement. You will remain more comfortable and better able to give a good account of yourself. You are better off with a couple of thinner layers, rather than one thick one.

14 STAY DRY

Traditional waterproofs are a cheap and effective way to keep your normal clothes clean and dry, provided you aren't hunting. Nylon-type waterproofs might be effective, but they are very noisy, and you will tend to sweat inside them if you are active. They're best left for the outdoor target shooters; hunters need a much quieter solution.

15 PROOF COTTON

I like using military-surplus DPM gear for hunting. It is cheap and rugged, but it is in no way waterproof. A shower will get it wet and not come through, but the cotton does soak up the water and become heavier than it already is. That can be improved though. Ballistol does a fabulous, little-known product called Pluvonin that will help to 'proof' open-weave fabrics like cotton against the rain. It won't make it waterproof, but the rain will bead up and run off much better.

16 FIND THE RIGHT BOOTS

Footwear depends on the terrain you are going to be traversing. Long wet grass or woodland? Wellies are the order of the day. Dry downland with short cropped pasture means walking boots will be fine. I like my Muck boots: theyhave good soles that grip on wet rocks and are supple enough to allow quiet footfall.



18 GET A RUCKSACK

If you get into the habit of taking a small rucksack, you will never leave anything you need behind again. I use a BCB 25-litre daysack: it will hold my pellets, my calls, a knife, a pruning saw, secateurs, a flask and small eats without even using the inside compartment. I can put a camo net and couple of decoys in if I need them. A polythene bag inside prevents any blood staining the rucksack should I be clever enough to shoot something. It is better than cramming your pockets full of bits.

19 HAVE PLENTY OF GLOVES

There are gloves for all seasons and all reasons. Even in summer, I use thin gloves just to hide the flash of skin that is a great giveaway; they also help to protect from mosquito bites. In the winter, warmer, soft-shell gloves keep hands warm and the trigger finger supple, but are soft enough to feel to shoot accurately. For more specialist disciplines, such as target shooting, gloves are used to give better support. Be diligent with your digits: they are the link to your trigger.

20 AVOID BIOLOGICAL WASHING POWDER

Hunters should all be aware of this: modern biological washing powders employ brighteners to make colours stand out and make whites whiter. The reason the colours are more vivid is due to the inclusion of UV brighteners. Hunters need to be aware that in nature ultraviolet signatures are used a great deal, and nature 'sees' in UV; so using these UV brighteners will make your nice camo jacket glow like a neon beacon!

GET A PROTECTIVE JACKET

17 What a minefield it is, negotiating the choice of jackets for shooting. Undoubtedly the most versatile is a Gortex membrane. They are extremely waterproof, but even these need treatment every so often. Fear not, the Nik Wax cleaning and proofing kit is easy to use and very effective.





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CARE & MAINTENANCE

WITH SIMON EVERETT

21 MAINTAIN YOUR BLUING

The outer metalwork of a traditional airgun has a finish on it called 'bluing'. It needs protecting against rust caused through contact with moisture: not just water, but a damp atmosphere can be enough. Wipe the *dry* surfaces with an oily rag; mine is an old linen tea towel impregnated with Ballistol Gunex, but some people just use WD40 or 3-in-1. I have found that the Gunex doesn't get washed off as much by heavy rain.

22 GET A RIFLE REST

You can buy, or make, a combined toolbox and rifle stand to make working on your gun easier. By having your air rifle supported, both hands are left free to work with. I use my rifle rest for the same purpose: it supports the rifle while I work away on it.

23 TREAT YOUR SCOPE LENSES

If you hunt in the woods in rain, it is inevitable that you will get rain on the front element at least, because you are looking up into the trees. Scope covers don't work when they are open!

I treat my lenses with Rainex; the water beads off the glass and gives me a clear sight picture, despite the weather. Some modern scopes are given a special lens coating that does the same job. I always carry a lens cloth in a pouch with me.

24 PRESERVE YOUR GUN

A gun cabinet is the safest way of storing your airguns, but they can be prone to condensation, depending on where they are sited. Just to be on the safe side, I put a sachet of Napier VP90 corrosion inhibitor in the cabinet, and ensure my rifles are dry and oiled before locking them away.

25 PICK YOUR BARREL CLEANING METHOD

An airgun bore rarely needs cleaning, but when it does, there are two accepted methods of going about it: using a pull-through or using felt pellets fired through. A pull-through provides more control and is what should be used on piston-powered rifles; it does require more effort and technique. Felt pellets can only really be used through a PCP: they are not good for a piston-operated gun unless a pellet is loaded behind, which defeats the purpose.

26 GET A GOOD RIFLE BAG

My rifle came with a high-quality, sheepskin-lined bag, but beware of putting a damp rifle into one, or you will end up with a brown rifle! Smooth-lined rifle bags don't store moisture in the fabric and dry much faster. When you come in from the cold, condensation will form on the cold metal: wait until your rifle reaches house temperature before drying, oiling and putting it away. It is easy to lock moisture in by being impatient.

27 LOVE YOUR STOCK

A gun stock is worth looking after. Oil-finished stocks need to be oiled to retain their appearance. There are many variations of stock oil; all are a mixture of linseed oil and other wood oils. The wood needs to be free of moisture and the stock oil is applied by hand: the heat from your hand warms the oil and helps it penetrate the grain. A lacquered stock can be protected using furniture wax polish or beeswax.

28 BEWARE CAMO WRAP

Hunters love to cover their rifle in self-clinging bandage-style wraps – but these can be a source of trouble. The wraps store moisture when they get wet, which eats into the metal beneath, unseen until it is too late. Remove your wrap on a regular basis to check no damage is being done.

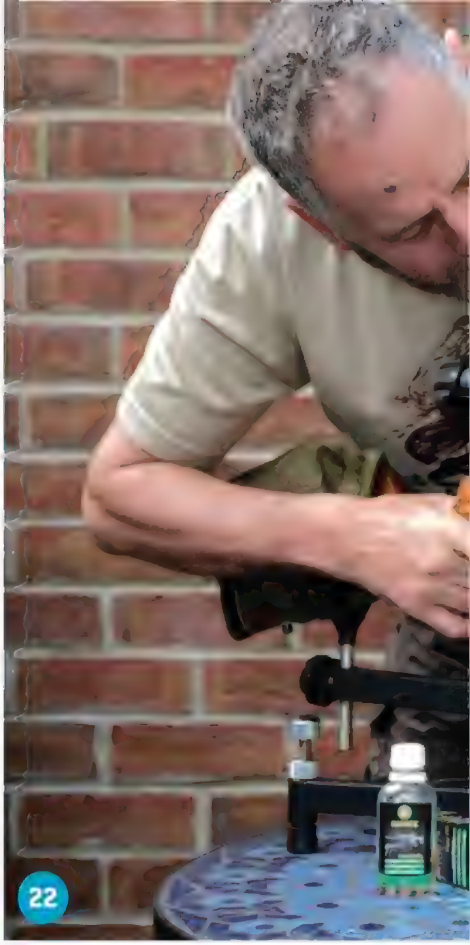
29 TRY A FLIP-UP LENS CAP

You will see plenty of airgun shooters using flip-up lens caps on their scopes. You have to buy the correct size for your scope, of course: they simply push-fit over the ends and provide a semi-permanent lens cover that can be easily opened in the field.

Flip-up lens caps protect the optics from dirt and rain whenever they are closed. They also keep the glass elements clean in your storage facility.

30 PRESERVE YOUR PELLETS

Pellets are best stored in their tin. I found out the hard way that soft leather causes oxidation due to the tanning process. As an alternative to tins, though, I like the Wilkins hard pouches, and have glued the foam from pellet tins around the inside: this prevents rattling and gives the pellets a soft cushion. Many competition shooters use a pellet clam with just enough pellets for the day in it.

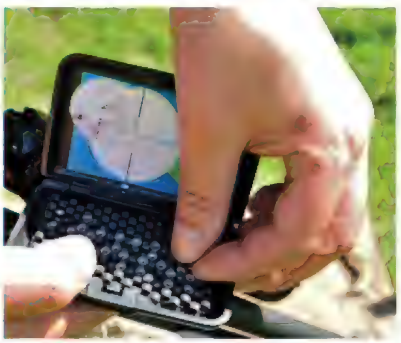






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25







HUNTING

WITH MAT MANNING

KEEP UNDER COVER

31 Make full use of natural cover and shade when you hunt on the move. It's a great way to hide your outline and will help your camouflage clothing work to its optimum.



WEAR LIGHT FOOTWEAR

32 Wear lightweight lace-up boots, or even an old pair of trainers, when stalking rabbits. Your footfalls will be a lot lighter in these than in an old pair of wellies – an important consideration, as rabbits have excellent hearing and are able to detect vibrations through the ground.

STAY PUT

33 If stalking tactics fail to get you close enough to wary rabbits, opt for an ambush and hunker down instead. A static approach demands patience, but it does away with virtually all the movement and noise that can alert quarry to your presence.



34 INTEGRATE YOUR HIDE
If you're building a hide, try to incorporate your camouflage net into a background of natural cover such as a steep bank, hedgerow or tree trunk. It makes your hide look like an extension of the existing landscape, and helps to prevent back-lighting from revealing your silhouette.

35 PEG YOUR HIDE NET
Use sticks to peg the bottom of your hide net to the ground. The tension creates more room on the inside, and also prevents the net from flapping in the wind and catching your quarry's eye.

36 DISGUISE YOUR NET
Dress your hide net with vegetation when targeting sharp-eyed quarry such as corvids. A few branches and leaves will really help to take the edges off the net and make it blend in with the countryside. Check with the landowner first and stick to weed species such as ivy, nettles, grass, brambles, docks and elder.

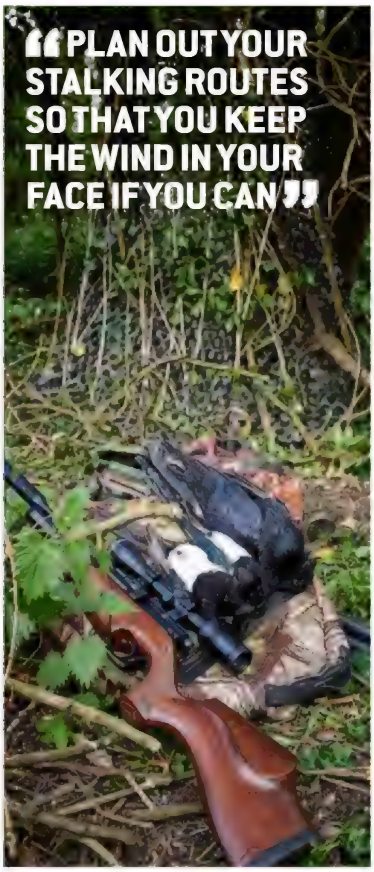


37 PLAN YOUR ROUTE
Plan out your stalking routes so that you keep the wind in your face if you can. The breeze will help to carry your human scent away from the twitching nostrils of wary quarry.

38 IMPROVISE A SUPPORT
Forgetting to bring your bipod doesn't mean you can't enjoy the luxury of rested shots when ambushing quarry from the prone position. Simply roll up your jacket and stuff it into your backpack to create a padded gun support that's almost as good as a bench bag.

39 CHECK YOUR DISTANCE
Use your laser rangefinder to ping the distance to markers such as fence posts, trees and gates as soon as you get into position. You can then use these reference points to estimate the range to your quarry. This prevents the risk of being spotted as you reach for the rangefinder in the heat of the action.

40 HAVE FOOD AND DRINK AVAILABLE
Remember to take food and drink with you on your hunting forays. Hydration and sustenance will keep you sharp, and stop you from cutting the session short to head for home after being struck by pangs of thirst or hunger. When the weather turns cold, pack a flask of hot soup to keep out the winter chill.





44 CONTROL YOUR CALLING

Pigeon, crow and magpie callers can be a great way to draw birds within range, but don't overdo it. Continual calling runs the risk of attracting your quarry's attention to your hiding place.

MORE HUNTING TIPS & TRICKS...

41 BRING A DECOY

Add a decoy to the arrangement when using bait such as a dead rabbit or squirrel to attract corvids within range. The plastic intruder will grab the attention of passing birds and will also create an element of competition that should make them more confident.

42 BE QUICK WITH PIGEONS

Strike quickly when you spot woodpigeons targeting crops on your permissions. These birds have a habit of quickly deserting feeding grounds when new food sources show up.

43 PLAN YOUR PIGEON HUNTING

Don't be in too much of a hurry when you get there, though... pigeons stick to clearly defined flight lines as they flit in and out of fields, and can be reluctant to move away from them. A few minutes of reconnaissance should reveal an incoming flightline. Get your decoys properly set up underneath it and you should be in for some busy shooting.



45 PLACE DECOYS WITH CARE

Birds like to land and take off with the wind in their face, so set up your decoys facing roughly into the breeze to make them look natural. Don't be afraid to tilt a few off at slightly different angles, though, and mix up the spacing between them a little – it'll add to the realism when viewed from above.

46 MAKE YOUR OWN CALLER

You can make a very effective magpie caller by putting a dozen or so heavy .22 pellets into an old 35mm camera film canister to create a rattle. Shake it to imitate the calls of inquisitive magpies to draw the real thing towards your decoy set-up.

47 POSE YOUR SHOT BIRDS

When decoying pigeons, it's worth breaking cover to retrieve shot birds if they land on their back – nothing spooks incoming woodies more than seeing a mate belly-up. Turn them the right way up and add them to the decoy pattern, using a stick or some stiff wire to prop up their heads. Real birds make for extremely effective decoys.

48 PUSH FURTHER THROUGH

You can use a hide net to suspend your pre-charged airgun for added support, but remember to push it through until the cylinder or bottle takes the strain. If you allow the barrel to bear the weight of your gun, it will probably be pushed upwards, causing your shot to miss over the top.

COVER YOURSELF UP

49 Even when shooting from a hide, it's often worth wearing a headnet and gloves when setting your sights on wary quarry. They'll hide telltale flashes of pale skin that can still blow your cover if spotted through the net, and will also help to keep biting flies and midges at bay.

50 PACK A TORCH

Don't forget to take a torch with you when you're using night vision optics. Hi-tech NV gear is great for stealthy hunting in complete darkness, but it's not so good when it comes to finding your way around safely and picking up shot quarry.



TRY A SCOPE LAMP

51 Try a scope-mounted lamp if you want to head out on after-dark pest control rounds but can't quite stretch to the cost of night vision optics. These clip-on lamps help to illuminate the sight picture wherever you point your airgun. You can always use a filter to soften the beam when targeting skittish quarry.



"TRY A SCOPE-MOUNTED LAMP IF YOU WANT TO HEAD OUT ON AFTER-DARK CONTROL ROUNDS"

SEEK OUT FOOD SOURCES

58 Identify food sources such as silage clamps, troughs and grain stores on farmyard permissions: they're real quarry hotspots. Closer investigation could reveal signs such as rat, crow and pigeon droppings. Set up nearby and you should be able to ambush the feed-thieves.



59 USE A FEEDING STATION

Make your own hopper, nail it to a tree about five feet off the ground and fill it with peanuts to create a grey squirrel feeding station. This is by far the most effective way to draw these notorious woodland pests down from their treetop hiding places and out into the open – especially during the winter, when natural food is scarce.

52 ARRIVE IN ADVANCE

If you're shooting woodpigeon at the roost, try to get into position a couple of hours before dusk. It should prevent you from putting the birds on edge by sending any early arrivals clattering from the treetops.

53 STAY PUT

Stay in position until night has closed right in when targeting roosting crows. These birds flight to the roost very late – much later than woodies – and you'll miss the best of the action if you head for home as soon as the pigeons stop flighting in.

54 MOVE WITH PURPOSE

If you're right-handed, try to move in an anti-clockwise direction as you creep around the outside of barns, sheds and farmyard machinery. Your gun will be on the outside as you peep around corners, enabling you to mount-up without having to step out from cover when you spot your quarry. Simply reverse the process and stalk round in a clockwise direction if you're a left-hander.

55 TRY LIQUID BAIT

When shooting rats, use a liquid bait to make them stop and present you with a static target. These skittish rodents have a habit of grabbing mouthfuls of food then darting back into cover – but they can't do that if they have to stop and lap up your offering. Liquidised cat food works brilliantly – rats can't resist its fishy aroma.

56 HAVE GRATITUDE

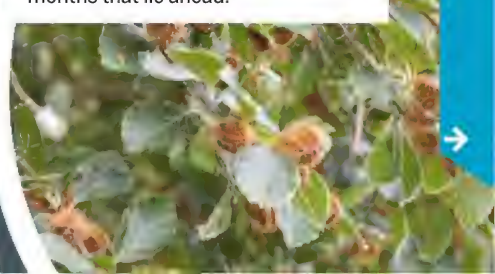
Having permission to shoot around farmyards, fields or woodland is a real privilege, so never take it for granted. Respect the landowner's wishes at all times and do your best to deliver the effective and responsible pest control service you offered them – if you don't, somebody else will.

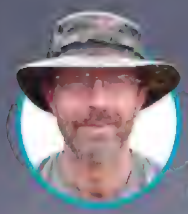
57 WATCH THE AIRGUN SHOW

Every two weeks, our YouTube channel brings you in-the-field action full of hints and tips covering a wide range of hunting scenarios to help you stay at the very top of your fieldcraft game.

60 KNOW YOUR TREES

Focus your efforts around oak, beech, sweet chestnut and hazel trees when controlling grey squirrels during late summer and early autumn. The nuts and seeds from these trees are real favourites with bushy-tails, and they'll be busy foraging and caching the rich bounty in readiness for the tough winter months that lie ahead.





RABBIT HUNTING

WITH CHRIS WHEELER

FIND A PERMISSION

61 Don't wait to be offered hunting land: track it down. Google Earth will show your target area and show you farms, golf clubs and other spots; and contact details can be found on the internet. Make some calls and arrange a meeting. Dress respectably. Take your air rifle but leave it in your car unless asked about it. Have your certificate of shooting insurance with you, along with your shooting permission agreement, both of which can be found through the BASC website.

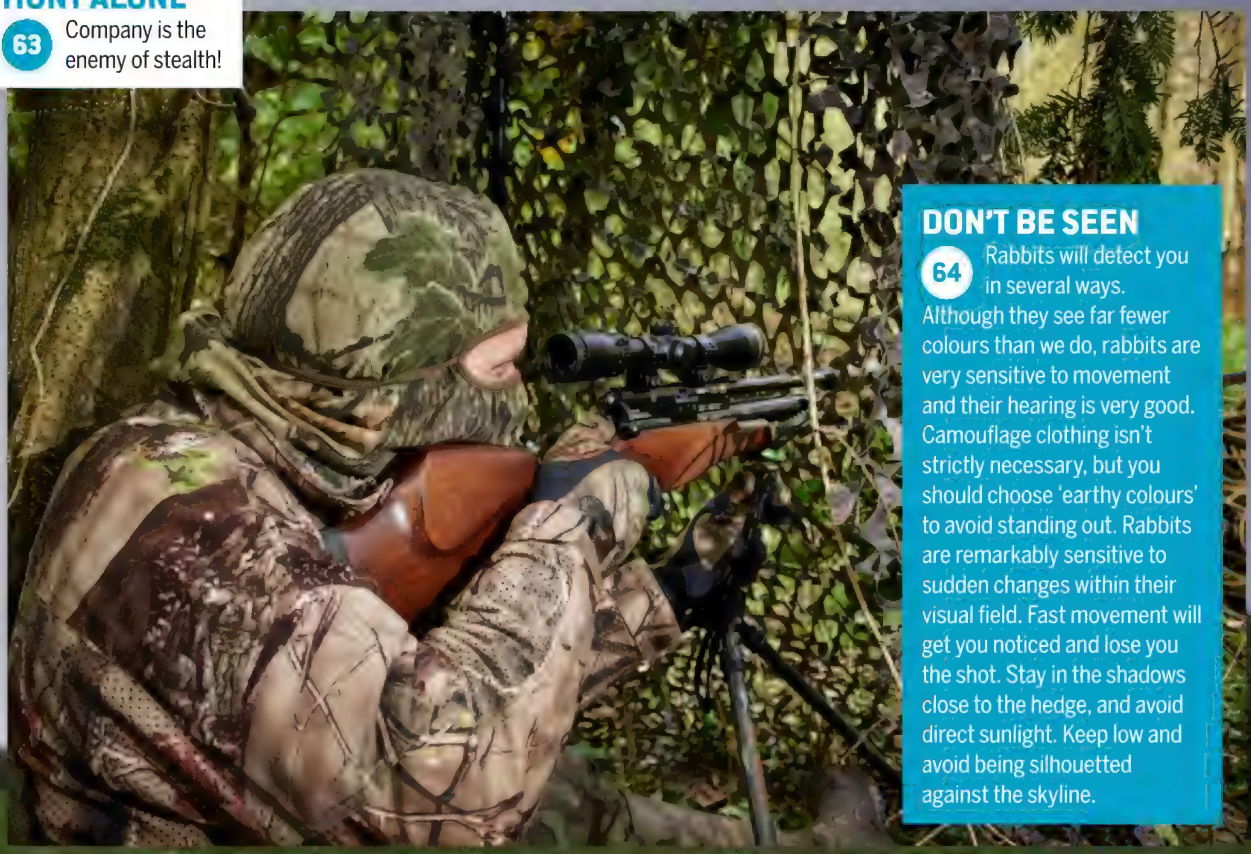
"DON'T WAIT TO BE OFFERED HUNTING LAND: BE PROACTIVE AND TRACK IT DOWN"

KNOW YOUR PREY

62 Successful hunts start with a knowledge of the creatures you are hunting. Study the habits of your prey species, and understand all you can about them.

HUNT ALONE

63 Company is the enemy of stealth!



DON'T BE SEEN

64 Rabbits will detect you in several ways. Although they see far fewer colours than we do, rabbits are very sensitive to movement and their hearing is very good. Camouflage clothing isn't strictly necessary, but you should choose 'earthy colours' to avoid standing out. Rabbits are remarkably sensitive to sudden changes within their visual field. Fast movement will get you noticed and lose you the shot. Stay in the shadows close to the hedge, and avoid direct sunlight. Keep low and avoid being silhouetted against the skyline.



65 KNOW YOUR PERMISSION

Visit your permission several times at different times of the day, without your rifle, and get to know the layout. Make notes on where occupied burrows are located (look for fresh poo pellets outside) and the best approaches to them. Check the prevailing wind direction and where the sun will cast shadows at the times you're likely to be hunting.

66 RANGE TO COVER

If you don't have a rangefinder then measure your zero distance, say 30 yards, and count the number of normal steps to walk it. Use this step count for shot ranging from cover. When ambushing rabbits, prepare your cover spot in advance of your shooting day.

67 DON'T BE SMELLED

Don't use aftershave or body sprays before hunting (or even on the same day) and wash your hunting rig in unscented liquid detergent. Stay downwind of your quarry to avoid being detected.

68 DON'T BE HEARD

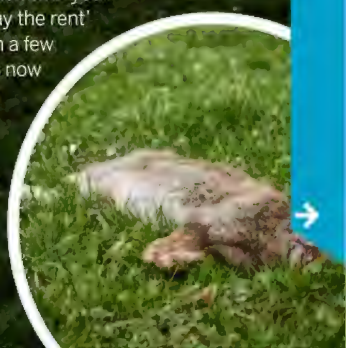
A sharp noise is very likely to spook your target and send it to ground, so tread softly. Avoid stepping on twigs or dry leaves, as these will give you away.

69 AVOID OVERHUNTING

While you may have success on a 'virgin perm', once you start hunting, opportunities may diminish as your prey becomes alert to a predator in the area. Don't go too often to the same place.

70 PAY THE RENT

Keep in touch with your landowner and 'pay the rent' for your perm with a few rabbits or pigeons now and then. He may well alert you to areas you've missed or tell you of a friend with a rabbit problem!





SPRINGER SHOOTING

WITH NICK STANNING



71 CHOOSE THE RIGHT GUN

This may seem obvious, but many people check internet reviews and ask on online forums for advice on what gun to buy and base their choice on that. OK, so it's a good place to start, but if you're 5'3", weigh 7st wet and aim to wander the hillsides in pursuit of rabbits, a heavy underlever with a huge scope may not be the right gun for you! If possible, go to a local club and try as many guns as you can: the club members are usually more than happy to show off their pride and joy to enthisiastic newcomers.

Alternatively, good gun shops should have a decent range of quality air rifles, and you can shoulder some to check for weight and fit. Remember the gun will be heavier and the balance will change with a scope mounted. If possible, try it with a scope in place.

"IF POSSIBLE, GO TO A LOCAL CLUB AND TRY AS MANY GUNS AS YOU CAN"



MAKE EVERY SHOT COUNT!

72 Unlike a multi-shot PCP or the new Gamo Maxxim Elite, you will not have a quick second shot available without losing sight of the target. Focus on making this shot 'the one'!

73 LUBE YOUR GUN

A spring-powered rifle is one big mass of moving parts, so proper lubrication is key to performance and longevity. Many spring rifles are inappropriately lubed from the factory: some are full of thick grease and others are far too dry.

If you can, strip the gun down, degrease the internal parts and rebuild with small amounts of a quality Lithium Molybdenum-based grease. Some high-moly content pastes are also available, which give excellent protection.

74 TUNE IT UP

Tuning is a catch-all term and can mean anything from fitting a set of £20 custom guides to having the gun entirely re-engineered at a cost of hundreds of pounds. While not always strictly necessary, improving the shooting characteristics of your rifle is something many springer shooters enjoy as much as actually shooting their guns.

75 BE TRIGGER HAPPY

Mastering trigger technique is far more important with a springer than any other type of rifle. The reach should be correct, with the pad of your finger comfortably rested on the blade. First-stage can be long or short to your preference, but the stop where the second-stage starts should be positive and consistent.

Finally, the let-off wants to come after gentle pressure, with no creep followed by a crisp shot – a sensation often likened to breaking a small rod of glass. Adjusting your trigger to its best potential can reap huge rewards.



76 PRACTISE, PRACTISE

As with most things, the phrase "Practice makes perfect" applies. Regularly drilling your techniques will help you do them instinctively – but as soon as you start to feel tired, take a break. Don't overdo it.

77 BE CONSISTENT

The unique thing with spring-powered airguns is the fact that the pellet is still in the barrel during the recoil stage. This means that if you change the way you hold your rifle, it will be in a different position when the pellet actually leaves the gun.

So if you hold the rifle tight and stifle it, the gun will be in a different position when the pellet exits the muzzle to where it would be if it had been allowed to move freely.

The trick here is repetition. As long as you hold the rifle the same every single time, the pellet will exit along the same path. Find a feature on your stock that your finger can recognise to ensure identical placement each time. Cocking slots, checkering panels and stock screws are all useful to this.

If you're shooting from a bench, make sure you have your hand between the rifle and the rest you are shooting from.

78 GO HUNTING

The PCP is the more popular choice for pest control nowadays, mainly due to the forgiving nature of its recoilless action. But that doesn't mean the springer isn't a useful hunting tool. There is nothing to compare to an evening's walk with your springer and a few pellets in your pouch, spying a rabbit 100 yards away and using all available cover to get within 30 yards for a clean, effective shot. For sure you will need to improve your fieldcraft skills and respect a shorter maximum range; but if anything, the enjoyment of the stalk adds to the experience.

79 PICK YOUR PELLETS

Springers are usually more efficient with lighter pellets. Try a range of brands and go with the most accurate, but look towards the lighter end of the market rather than the heavyweights PCPs prefer.



80 TRY AN ARTILLERY HOLD

You will hear the artillery hold mentioned often in springer circles: it has been around since the 1890s, but was only named relatively recently and adopted by springer shooters worldwide. It is a hold that can be used to allow the rifle to recoil freely from standing or kneeling positions.

Support the rifle at the point of balance, usually just ahead of the trigger. Allow the rifle to rest on your palm or fingertips: do not grip it, just support the weight. Your trigger hand should have a gentle hold around the grip.



ACCURATE SHOOTING

WITH MIKE MORTON

81 KEEP IT CLEAN

Clean your barrel and re-lead it on a regular basis. It's a process that's often overlooked, but it can make a world of difference to accurate shooting.



82 GET REACQUAINTED SLOWLY

Take the time to re-familiarise yourself with a gun if you haven't shot it for a while. While some airgun shooters will have only one gun, many people own several. Muscle memory is generally built up for the last gun you shot, so you may need time and practice to let your mind and body adjust if you switch to a different one.

83 GET CLOSE TO YOUR RIFLE

Get to know your rifle intimately, especially if it's a new one. With the rifle uncocked, unloaded and pointing in a safe direction, learn how to locate the controls with your eyes closed, especially the safety catch and trigger. Take the time to familiarise yourself with the controls on your optic too. In a competition or hunting scenario, familiarity breeds content.



84 STAY CALM

Don't snatch your trigger, and do follow through your shots. It's all too easy to get pumped up and and over-eager, but controlled breathing and a controlled trigger will really pay dividends.

85 SMILE!

Have fun and try to relax. While this is sometimes easier said than done, stress-induced tension is an enemy of accurate shooting. If you're not in the right frame of mind, you're unlikely to perform at your best. The antidote to this is to have a fun plinking session rather than taking on any serious hunting or target work.

ADJUST TO FIT

86 Ensure your gun fits you as well as it can. If you have an adjustable stock, find the correct height of the butt pad. Alter the cheekpiece so your eye is perfectly centred behind your sights, regardless of whether you're using irons or an optic.



87 GET ROCK-SOLID

Get yourself as stable as possible before taking a shot, and use aids such as a bipod, shooting sticks or a bean bag. Unless you are practising a stance, choose the most stable position available, which generally means prone, sitting, kneeling and then standing.



88 EXPERIMENT WITH PELLETS

Unlock the potential of your rifle by finding out which pellet it prefers. Test different types under controlled conditions and make notes as you go. Using the right ammunition for your barrel can turn a blunderbuss into a tack-driver.



89 SHOOT OFTEN

Practise as often as you can. Technique can be finely honed by shooting little, but often, and dry-firing can also be beneficial if you're shooting a PCP. However, shooting skills can just as easily be dulled by inactivity. Just get shooting again on a regular basis.



90 KNOW YOUR TRIGGER

Regardless of whether it's a match-grade unit or not, learn how your trigger behaves. Find out exactly how much movement is required and how much pressure is necessary to release that shot. You should never be taken by surprise when your gun goes off.

Sporting & Target

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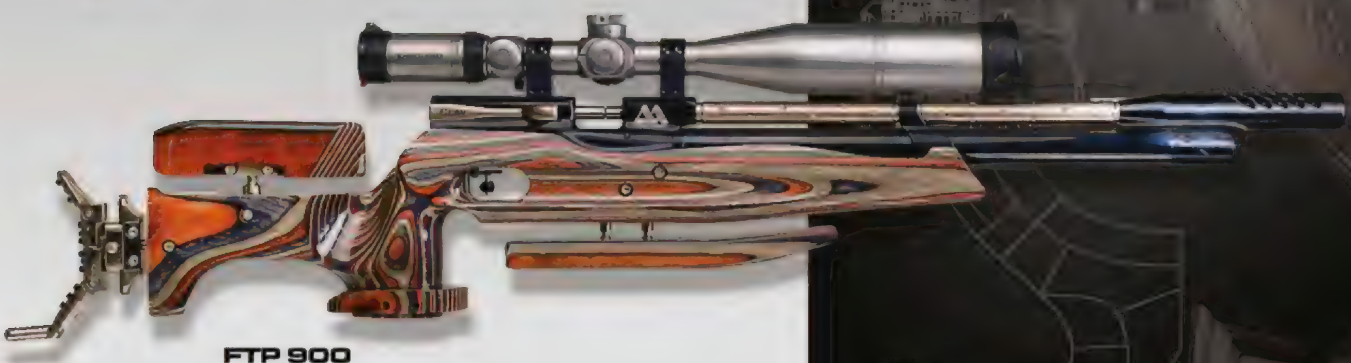
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TARGET SHOOTING

WITH ANDY MCLACHLAN



SEEK OUT PELLET BATCHES

91 Rather than just use a brand of pellet that has worked for you in the past, have a look under the tin at the pellet batch number. What you want to see is that the tins all have the same code, meaning that they all came from the same die in the factory.

It is no good just looking to see if they all say "4.52", for example. Pellets manufactured by JSB will all have a series of codes on a sticker located underneath the tin. If you find a pellet from a batch that shoots well from your own gun barrel, find a retailer who has a supply of these and buy as many as you can. I know competition shooters who will travel far and wide to purchase vast stocks of a certain pellet die number if they can locate them. This will ensure that you have confidence in your ammunition.

92 TRY A GLOVE

If you are serious about outdoor target shooting and haven't already got one, buy yourself a properly fitting target glove. They're guaranteed to improve your performance straight away!



93 GET SOME SCALES

If you haven't already got one, buy yourself a set of digital scales that will allow you to properly sort your pellets. Although I know people out there like to sort weights to two decimal places (8.44), I personally prefer to just weigh to one (8.4). If you do this, the pellets that might cause you to miss a target, usually at long range, can be removed at source, once again giving you more confidence in your ammo. In a tin of 8.4 pellets, I find many that are either 8.2 or 8.6 grains, and it is these rogues you want to avoid!



94 BUY A POUCH

Using one of the plastic pellet holders that allows each of your pellets to be lined up like soldiers in a line is great in summer. It's not as much fun in winter, however, as rain, mud and all sorts of other nasties can leave your cherished pellets looking a bit grim.

Buy yourself a good-quality pellet pouch. Once you have poured in a supply of preferably weighed pellets, find yourself some foam packaging material and cut it to size so it fits snugly into the pouch. That way, when you lay down to take your shot, your cherished ammo won't go rolling out onto your mucky mat.



95 MAINTAIN YOUR BAG

Check the condition of your gun bag! Watching an expensive Steyr target rifle do a nose-dive onto concrete is not a pleasant experience, believe me. You need to check the condition of zips and particularly carrying handles or straps, which have a nasty habit of working loose or fraying.

96 CHECK YOUR SCOPE

Are you 100% sure your scope is square to the gun's action? If not, use editor Mike Morton's method of two spirit levels, one on the action and the other on the scope, to make sure they are aligned correctly.

97 LEAN INTO THE CHALLENGE

To improve your overall average score, practise shooting the targets you find most difficult. In my case, that is kneeling shots. I don't like them, but it's what I practise most.

98 JOIN A CLUB

I would like to think that all our readers are members of an airgun club. If you aren't, you should be!

99 LEARN TO LAUGH

Don't take the inevitable misses too seriously. I used to get really worked up when I missed a target, but I have learned just to learn from my errors.

GET A SCOPE ENHANCER

100 Buy yourself a scope enhancer to reduce the risk of parallax error. They're cheap to buy, and are a great investment in improving accuracy.



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YOUR NEXT GUN IS...?

The modern air rifle shooter is bombarded with a bewildering array of options. However, Mike Morton lays out some basic ground rules to help make that choice a little more informed

Do you remember the first air rifle you bought? Was it a good choice? Did you visit several gun shops and pore over their stock for hours or even days before making a purchase? Did you match your needs to the rifles you were looking at? Or did you buy on impulse? That last option can sometimes be the most effective of all – but it can just as easily leave you out of pocket if you've ended up buying a donkey. And, yes, that includes me. I think most of us have ended up buying an Eeyore rifle at some point in our shooting careers!

The choice of air rifles on sale today is phenomenal, but for most people their budget is not. So before parting with your hard-earned cash, it's worth running through a few pointers – some very basic, some less so – to make sure you get a big enough bang for your buck when parting with your money. Let's assume you already know what you want to use your rifle for, but what comes next?

HOW POWERFUL?

Under current UK firearms legislation, an air rifle which can be held without a Firearm Certificate (FAC) must not have a muzzle energy in excess of 12 foot pounds. This is



the amount of energy needed to move 1lb in weight some 12 feet, and is sufficient for all organised airgun target shooting and most airgun quarry hunting scenarios. Some short-range target competitions restrict muzzle energy to 6 ft lb, and some specific guns, such as the BSA Ultra JSR, are voluntarily curbed to this lower power level.

Most new air rifles will be adjusted to deliver just over 11ft lb, to keep them well within the law. However, it is the shooter's responsibility to ensure their rifle does not exceed the 12ft lb limit. A device called a chronoscope can be used to test a rifle's muzzle energy. Most gun shops will test your rifle for you on their chrono or you can buy your own.

"IT'S THE SHOOTER'S RESPONSIBILITY TO ENSURE THEIR RIFLE DOES NOT EXCEED THE 12 FOOT POUND LIMIT"

WHICH CALIBRE?

The debate over calibre – typically .177 versus .22 – has been going on for decades and is unlikely to be settled here (even though it's .177!). But, joking aside, there are certainly plenty of points to consider when examining calibre choice.

For both precision target work and hunting .177 offers a flatter trajectory than .22, which is a distinct advantage when shooting over different, unknown distances. This is less important at an indoor target club where the rifle will be shot at a specific distance and the scope can be zeroed accordingly. Calibre choice is far more crucial in the hunting field or when shooting outdoor target disciplines such as Hunter Field Target (HFT) or Field Target (FT), where the .22's more loopy trajectory must be taken firmly into account.

Nevertheless, .22 does have several specific advantages over .177. In a hunting scenario, a .22 pellet will transfer more energy to the quarry – provided you can place that pellet in the kill zone, which is easier to do with .177. A .22 rifle is more energy efficient, and in a spring-powered rifle that means less cocking effort is required as the spring does not need to do as much work and so the firing cycle is a little smoother.

In a pre-charged pneumatic (PCP) less air is needed to give a .22 pellet the same energy (not velocity) as .177; therefore, .22 is more air efficient, meaning the rifle delivers more shots per air fill than its .177 counterpart.

There are more immediately practical benefits of .22 pellets as well. They are obviously larger than .177, and are therefore more easily manipulated regardless of the user's hand size. Some disabled shooters may find .22 easier to shoot.

And while not a deal-breaker for many people, it's a fact that .22 pellets are costlier than their .177 alternatives. Depending on how many pellets you shoot – 1,000 a week or 1,000 a year – this could be a major factor in your choice of rifle.

Several other air rifle calibres exist, notably .20, .25 and .303, but these are extremely specialist, the uses of which go beyond the scope of this article. Don't worry, we will be talking about these at length in due course.

While specialist calibres such as .20, .25 and .303 are available, the main choice to be made is still between .177 and .22, especially at non-FAC power levels



SPRINGER OR PCP?

If calibre choice is important then choice of powerplant is crucial, and can be quite divisive among air rifle shooters. But, again, certain facts hold true and at least need to be considered when buying an airgun. Cost is a big factor as spring-powered rifles tend to be cheaper than PCPs, and they can be heavier too, which, as we'll see, may or may not be an advantage.

Springers are far harder to shoot accurately than PCPs



HOW TO: GET GOOD LENGTH OF PULL



With the butt in the crook of your elbow, the pad of your index finger should naturally fall over the centre of the trigger blade. It's a rough and ready test, but it works.



Adjustments can sometimes be made by repositioning the trigger or by adding or taking away spacers in the butt. However, a custom stock may be the only solution.





It's a fallacy that spring guns are less accurate than PCPs, but it's a fact that they can be harder to shoot well enough to exploit that accuracy

due to the fact that they recoil and may be hold-sensitive. But, for some, this can be an asset. Purists prefer springers because a bad shooting technique is easier to spot with that type of rifle than with a PCP.

Springers can also be more easily serviced at home than PCPs – with the right tools and experience. PCPs tend to be more expensive than springers and have to be filled with compressed air from a separate source – such as a dive cylinder, pump or specialist compressor like the Omega Super Charger (www.omegacompressor.com).

Now we come to the crux of it: PCPs are easier to shoot well as there is no recoil and they are generally not hold-sensitive; but on the downside PCPs can mask a poor shooting technique. Many target shooters prefer PCPs because they are more clinical and predictable to shoot; however, springers can be shot superbly by those with sufficient skill and experience.

PCPs can be shot offhand, rested, or off shooting bags, sticks or a bipod with virtually no shift in point of impact, provided the forend is stiff and/or the barrel is free-floating.

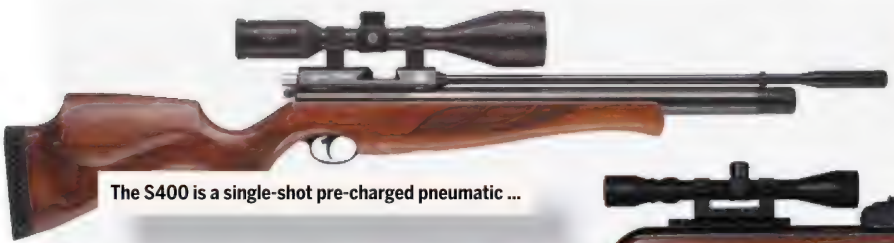
Two other types of powerplant are available in air rifles: gas-rams and CO2 capsules. Gas-rams behave similarly to springers and can be treated as such when exploring rifle choices, although their firing cycle can be quite snappy. CO2 rifles are



A telescopic sight opens up a whole new world of accuracy and is very much the norm for most air rifle shooting these days

SPRINGER OR PCP?

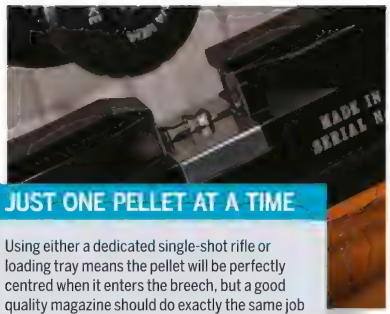
Most shooters will start off with a springer or gas ram, largely due to cost, but also because bad shooting techniques can be spotted and corrected sooner, rather than later



The S400 is a single-shot pre-charged pneumatic ...



... while this Maxxim Elite is piston-powered



JUST ONE PELLET AT A TIME

Using either a dedicated single-shot rifle or loading tray means the pellet will be perfectly centred when it enters the breech, but a good quality magazine should do exactly the same job

best suited for plinking (informal target shooting) only as they are not really consistent enough for accurate target shooting or hunting – despite the claims of some manufacturers. Nevertheless, plinking is just as valid a use for an airgun as any other, so CO2 might be the perfect powerplant for your rifle.

SINGLE-SHOT OR MULTI-SHOT?

With some rare exceptions – such as the Gamo Maxxim Elite (www.gamo.com), the long out of production 1990s BSA Gold Star (not the new PCP of the same name) and the 1970s ASI Paratrooper – gas-rams and springers are single-shot only. Most PCPs, on the other hand, are offered in single- or multi-shot format; the latter is usually a removable 10-round magazine, although some PCPs from a decade ago did offer a sliding breech block holding two pellets.

Single-shot rifles can be more accurate as the pellet is pushed centrally into the breech, whereas this may not always be the case with a multi. Single-shots are cheaper and are generally more reliable as there is less to go wrong. Single-shots are also easier to operate as there is no magazine to index before the next shot is taken, just the need to cock the rifle and seat the pellet.

Multis, on the other hand, with their faster rate of fire, are arguably more fun and give the shooter the ability to reload



A multi-shot rifle is arguably the more ethical choice for hunting because a follow-up shot is more readily available

JARGON BUSTER

ZEROING: Lining up the sights on a rifle with the point where the pellet hits at a chosen distance.

Gravity means the pellet is tracing a downward arc as soon as it leaves the muzzle, so the sights must be adjusted to intercept the pellet's trajectory at a chosen point - this is your zero.

HOLD-SENSITIVE: The point of impact may change if a rifle, usually a recoiling type such as a springer or gas ram, is held in a different place and with a different type of grip for subsequent shots.

A shot taken with a tight grip on the forend followed by a second shot with the rifle rested on the palm of the hand just in front of the trigger guard may result in two very different points of impact. Such a rifle is hold-sensitive.

FREE-FLOATING: A barrel is free-floating if its only point of contact is where it is connected to the breech block of a rifle.

Any contact elsewhere, such as a barrel band, the stock or air cylinder, may result in a change in point of impact.

whilst keeping their eye on the target – potentially offering more consistent shot placement for target work (competition rules allowing) as well as a quick follow-up shot in the hunting field. By contrast, single-shot rifles, with every pellet having to be individually loaded by hand, are arguably safer.

There's an old argument that says single-shots offer greater accuracy simply because each pellet can be inspected for deformities before it's loaded into the breech, but the shooter has exactly the same opportunity to check each pellet before they are loaded into the magazine.

OPEN SIGHTS OR TELESCOPIC SIGHT?

With some exceptions, including dedicated short-range target rifles, almost all modern PCPs and many springers are intended to be shot using a telescopic sight. Some rifles, usually springers, may come with open sights but will have the option of fitting a scope, such as the Weihrauch HW 77. In this case a scope is usually used instead of the open sights, but it is sometimes possible to use both if see-through scope mounts are fitted.

Both open (also referred to as iron sights due to the metal from which they were originally made) and telescopic sights must be adjusted before the rifle can be shot accurately. Scopes offer more precision when aiming, but it's faster to acquire the target when shooting with open sights.

Telescopic sights and the mounts needed to attach them to the rifle are an additional cost; however, they can be taken off and used on other rifles if required.



Weight can help absorb recoil

Lighter rifles can be good for smaller shooters

LIGHT OR HEAVY?

A heavy rifle can be held steadier on the aim that a lighter one – but only for a short amount of time

Setting up and adjusting a telescopic sight needs a certain amount of expertise, time and suitable test conditions – it is not something that should be rushed. Check out our scope-mounting guide on page 60 for more details.

LIGHT OR HEAVY?

Contrary to popular belief a heavy rifle can be a bonus, at least in terms of accuracy. Heavy guns can generally be held steadier for short periods of time and, in the case of springers and gas-rams, absorb recoil, both of which promote accurate shooting. But heavy rifles can be impossible to shoot for youths and slightly built adults unless they are mounted on a bipod or are otherwise shot rested. A heavy gun can also be an encumbrance when out stalking for any length of time.

LONG OR SHORT?

A rifle with a shorter than normal barrel length is called a carbine. Carbines are easier to handle and the barrel is less likely to hit an obstruction. This makes a carbine easier to shoot in confined spaces, such as from a hide or vehicle, and makes it easier to store in a shorter gun bag or gun cabinet. This is also true of bullpups which can have a rifle-length barrel in a chassis that delivers the overall length of a carbine.

The other dimensions to consider – which are far more important – are the length of reach and the height of the cheekpiece. The reach is the length of the rifle from the butt to the trigger. People with short arms will struggle to properly shoot a rifle with a long reach, and the same is equally true for →

"CONTRARY TO POPULAR BELIEF, A HEAVY RIFLE CAN BE A BONUS, AT LEAST IN TERMS OF ACCURACY"

HOW TO: GET GOOD HEAD POSITION



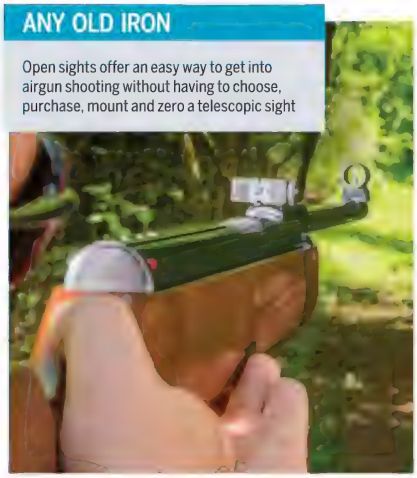
Head position is just as important as eye relief when using a scope. Many stocks don't offer an adjustable cheekpiece, meaning perfect head position can be something of a lucky dip.



This rifle is adjustable, and the cheekpiece can be raised or lowered to centre the eye behind the ocular lens of the scope. If you have to move your head, the height is not right for you.

ANY OLD IRON

Open sights offer an easy way to get into airgun shooting without having to choose, purchase, mount and zero a telescopic sight



LONG OR SHORT?

Carbines and bullpups are great for using in confined spaces, and there's less chance of bashing the barrel when out stalking





Twelve foot pounds might not seem that much, but it's more than enough power for target shooting, hunting airgun quarry and punching holes in tin cans

HOW TO: CORRECTLY ADJUST A SLIDING BUTT PAD

Most shooters tend to leave a height-adjustable butt alone, but this can really help fine-tune head position. Raise the butt if the scope is too high or slide down the butt if the scope's too low. Another, more natural, way to do this is to completely loosen the hex bolt holding the butt in place and then shoulder the rifle and look through the sight. The butt should naturally rise or fall to position itself correctly in your shoulder



long-armed people using a rifle with a short reach. You need to handle the rifle and make sure the reach is correct for you. A very rough rule of thumb is to hold the rifle in your trigger hand, place the butt in the crook of your elbow and see if the pad of your trigger finger falls naturally over the trigger blade. If this feels good, shoulder the rifle and test the reach this way as well.

The height of the cheekpiece – the area where you rest your head when taking aim – determines where the shooter's eye naturally falls behind the scope. If it is too high or low the shooter will find it difficult to maintain a consistent aim through the scope – or open sights for that matter.

> **"THE SHOOTER WILL NEVER REALISE THEIR POTENTIAL UNLESS THEY ARE COMFORTABLE WITH THEIR RIFLE"**

Some rifle stocks have adjustable cheekpieces and butt pads, and scope mounts can sometimes be substituted for those of a different height. These can all help solve problems relating to the height of the cheekpiece.

WHICH RIFLE?

A rifle needs to be accurate, reliable, durable, and easy to operate and shoot, but above all else it must fit the shooter. They will never realise their full potential unless they are comfortable – physically and mentally – with the rifle they are using.

Someone looking for their first, or replacement, rifle should visit a club, shoot its rifles, shoot other members' rifles and ask lots of questions. Ultimately only they can determine whether one rifle is more suitable for them than another. Which is best? It's the one that fits you properly. ●

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The Priest



DESIGNED TO BE ACCURATE AND POWERFUL!



Compact and Light

When designing the rifle we had compactness and lightness in mind. The Priest measures 706mm in length and weighs only 3kg with the bottle and 2,1kg without it.



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Cocking handle allows you to quickly cock the rifle, because of the smartly designed and positioned cocking mechanism which is on the left front side of the rifle.



Hi-Cap Bottle with Regulator

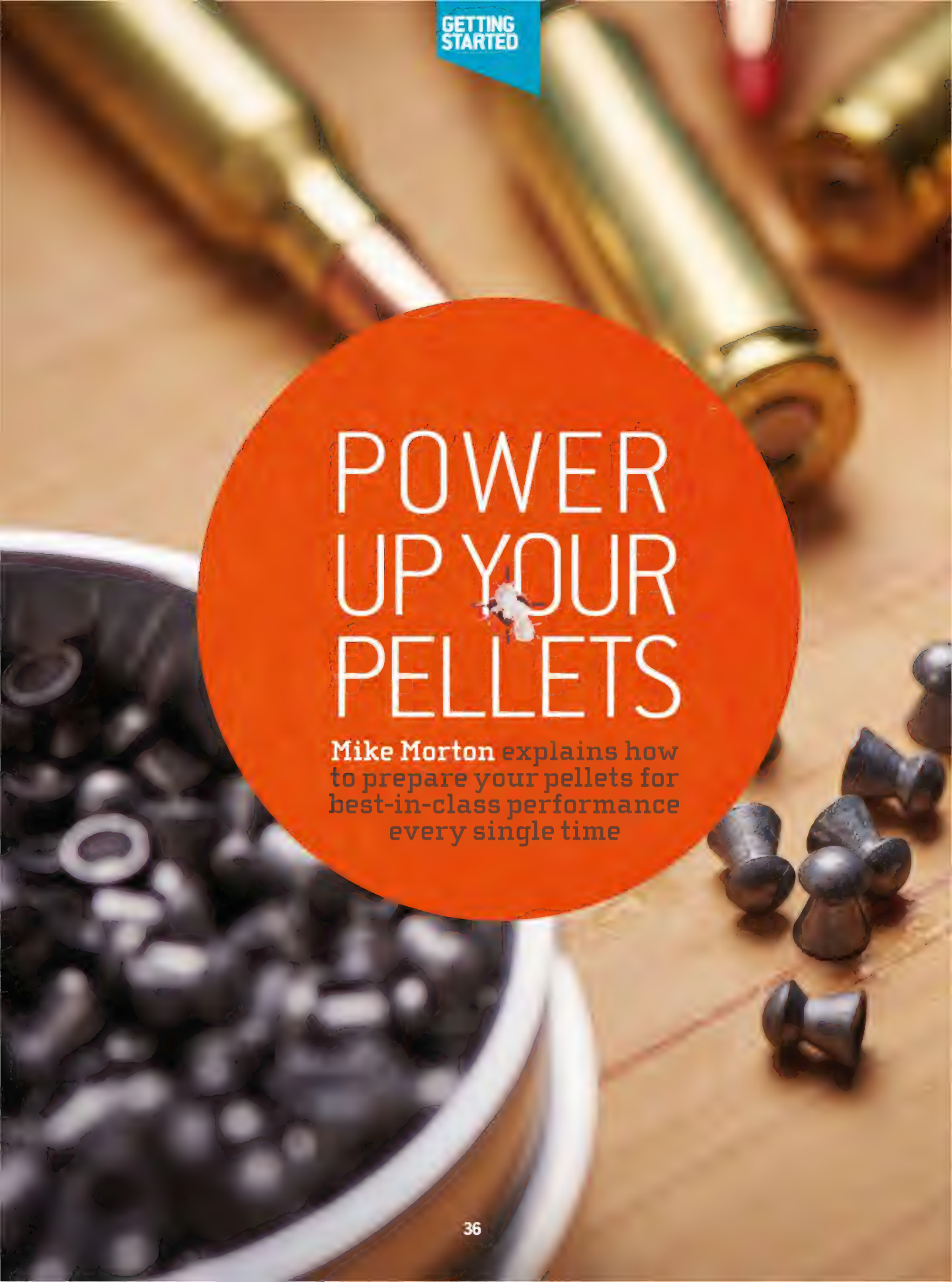
The Priest comes with a 320cc buddy bottle which has a working pressure of 300bar. On top of it it has a pressure regulator which is by default set to 125bar.

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POWER UP YOUR PELLETS

Mike Morton explains how to prepare your pellets for best-in-class performance every single time



It's no secret that individual barrels work best with certain pellets. Some barrels are happy to work well with more than one type of pellet, while others will only deliver the very best results with one brand. Let's assume you've found your barrel's favourite. What next?

Some centrefire rifle shooters enjoy making their own ammunition, which is known as reloading. It's a rewarding hobby that can work out cheaper than buying over-the-counter ammo; but its biggest draw is the fact that the ammunition can be optimised for a particular rifle barrel and chamber. Airgun ammo can be optimised, too, through a combination of washing, lubing, head sizing and weighing.

Most pellet manufacturers do an incredible job of producing high-quality ammunition made to very tight tolerances, and they manage to deliver all this at an incredibly low price – roughly 2p per pellet in .177 calibre. Because of this, many shooters are happy to use their pellets straight out of the tin, often getting some superb results.

Cycling fans will probably have heard of Team Sky manager Sir Dave Brailsford, who has an eye for identifying areas where minor gains can be made. These small improvements seemingly offer little advantage in themselves, but can deliver a much greater benefit when used in conjunction with one another. It's the same here. Of the four steps we're about to look at I believe two have a major effect on rifle consistency and accuracy, while the others offer only minimal gains. But put all of them together and it's a winning combination.

IT'S TIME TO WASH UP

Years ago if you bought a tin of pellets there was a good chance you'd also be buying a generous dose of accompanying lead swarf. The argument here is that some of the swarf can collect on the surface of the pellet, potentially gathering inside the skirt as well, and therefore changing the pellet's weight or otherwise adversely affecting the way it travels down the barrel.

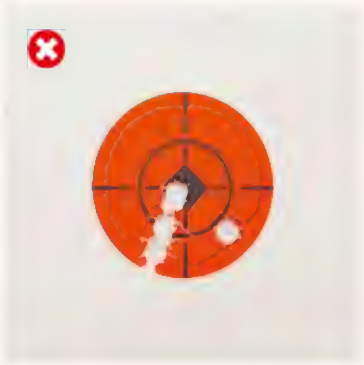
Quality control has come a long way and I can't remember the last time I opened a tin of pellets where swarf was a big problem. Nevertheless, if you wash your pellets – as we're about to do – and then examine your rinse water you'll still find small amounts of lead particles have been removed from your ammo. Will this change your downrange accuracy results for the better? Probably not in itself – but remember Brailsford's marginal gains.

So let's get washing. You'll need a bowl or jar to place your pellets in while they're

PREPARED VS UNSORTED PELLETS



OPTIMISED AMMO: Properly prepared pellets give you the best chance to deliver some truly stunning results, as this tight grouping clearly demonstrates.



UNOPTIMISED AMMO: Unsorted pellets can work well straight from the tin, but you do run the risk of unpredictable flyers, as this less flattering grouping shows.

being washed, warm water, washing-up liquid, a sieve, a towel and either a hairdryer or a heat gun. It's not a bad idea to use a dedicated bowl, sieve and towel just for this task because lead is a poisonous metal.

Make up a warm, soapy solution in your container and gently pour in a whole tin of pellets. Swirl the pellets around and agitate them enough to loosen up any of the dreaded swarf or release agents that may have been used in the pellet manufacturing process. Rinse the ammo in the sieve under warm running water. If you're feeling particularly keen, repeat the process. Isn't all this pouring, swirling and agitating going to damage the pellets? No, they're tougher than you think. They've already come a long way, typically from either the Czech Republic or Germany, and likely will have withstood that journey pretty well.

The next step is to dry the pellets, and I like to do this while they're still in the sieve. A hairdryer will do the job but this will take quite a long time. A heat gun is my preferred option, but I take care to keep mine on the lowest heat setting, which is still hotter than the hairdryer. Excess water can be soaked up by a towel placed underneath, which also protects your work surface from the heat.

So we now have a tin's worth of perfectly clean and dry ammo. If you shoot these pellets now will you see any noticeably different results from those shot straight from the tin? I doubt it. So what's the point? Again, let's keep those cumulative marginal gains in mind.

LIQUID ENGINEERING

It's now time to lube those pellets, and the obvious choice for this is Power Pellet Lube from Napier (from £3.83 at **www.napieruk.com**), which is readily available. It's a red-tinted liquid that, according to the manufacturer, improves accuracy, cleans, protects from corrosion and increases velocity. Let's talk about how to apply it, then discuss what it may or may not do.

A great time to apply this product is immediately after the washing and drying phase, while the pellets are still warm. The lubricant will coat a heated pellet far better than a cold one, applying a uniform film over the entire surface of your precious projectiles. A microfibre towel is ideal.

If you are carrying out this operation for the first time you may need to pour quite a lot of lube onto your microfibre towel, but it isn't being wasted. When you've finished lubing your current batch of pellets fold up the towel and keep it in an air-tight container for next time. You'll only need a few drops per batch thereafter.

> **"PELLET LUBE PREVENTS THE AMMO PICKING UP ANY LEAD DEPOSITS FROM THE BARREL"**

Okay, we had clean pellets and now we have clean, lubed pellets. While this isn't a proper review of Power Pellet Lube, my own findings on its claims are as follows:

JARGON BUSTER

RIFLING: The spiral lands and grooves in the bore of a gun that stabilise the pellets by spinning them either clockwise or anti-clockwise as they travel down your airgun's barrel.

LANDS: The part of the bore that remains following the rifling process. Because the grooves are cut into the metal of the bore the resulting lands appear to be raised.

GRAIN: A unit of weight used to measure the mass of a pellet. In firearms terminology it is also used to measure the weight of bullets and powder charges.

Does it improve accuracy? To be honest, I haven't found any noticeable difference in group size between standard pellets and those that have been lubed. But, as the Americans say, your mileage may vary.

Does it clean a pellet? Yes, especially if you haven't already washed them. And it's a great cleaner and rust protector for the bore of your rifle as well. One of the most important functions of the lube is to form a protective layer over the pellets to prevent oxidation. Heavily oxidised pellets display a rough, uneven surface that will definitely affect uniformity, consistency and accuracy.

Does the lube increase velocity? In my experience it actually has the opposite effect, probably due to the fact that the slippery pellet has less resistance when travelling down the barrel, and therefore less air pressure can build up behind it. Does this matter? Not really, as long as the velocity from pellet to pellet remains consistent.

Another key function of pellet lube is to prevent the ammo picking up any lead deposits from the lands of the rifle's barrel, affecting the balance of the pellet and destabilising it in flight.

(HEAD) SIZE MATTERS

I remember when I began taking a more serious interest in my air rifle shooting. I understood reasonably quickly why it was important to test pellets to see whether some worked better than others. But different head sizes? That was an unwelcome complication in my early days of club target shooting. However, it was one that needed further investigation.

Let's look at .177-calibre pellets. A direct metric conversion is 4.4958mm, but pellets from the same manufacturer and of the

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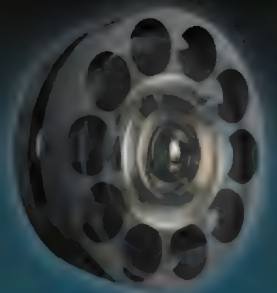


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same type are sometimes offered in different head sizes. You can find tins of .177 JSB Exact, for example, offered in either 4.52mm or 4.53mm head sizes.

So you've tested different types of pellet, you've moved on to testing different head sizes and have found one size definitely seems to perform better in your barrel than another. Is that the end of it? It should be but it isn't. If you take a tin and actually measure the pellets inside you may be unpleasantly surprised to find a variation in head sizes. This may very well account for some of those flyers you've been getting.

It's difficult to reliably measure head size with conventional instruments, such as a digital caliper, so I use a US-made device called a Pelletgage. This consists of a laser-cut metal plate and clear plastic guide frame with cut-outs for pellets sized from exactly 4.46mm up to 4.55mm. Drop a pellet into one of the holes: if it falls in try it in the next size down. Keep going until the pellet won't fall into the hole. When you've found the smallest hole into which it will fall you've found its true head size.

> **"ACCURATE AMMUNITION IS ONE STEP ON THE JOURNEY TO AN ACCURATE RIFLE"**

I have a tin of JSB Exact with a label on the bottom telling me they are meant to measure 4.52mm. Having used the Pelletgage I didn't find a single pellet that actually measured that size! All were either 4.49mm or 4.50mm – a huge variation from what they are supposed to be. I know from experience that the rifle with which I was intending to shoot them prefers 'true' 4.52mm pellets. This tin is no good for this rifle because the pellets are too small and, as expected, accuracy would suffer.

Subsequent tins of JSB Exact marked 4.52 from a different batch proved to be closer to the magic 4.52mm, with all the pellets measuring either the advertised size or 4.51mm. This is why some people, having found their perfect pellet, will buy as many tins as they can from a specific batch. Accuracy is born from consistency.

In practical terms, I've found my rifles are generally fairly happy to shoot slightly different head sizes, but within a fairly narrow range. Find your ideal size and the barrel will probably shoot well enough with a head size one-hundredth of a millimetre either side. Accuracy declines the most when pellets go even smaller than this. An undersized pellet does not grip the rifling sufficiently, and some of the air behind this ammo will be blasted over it rather than converted into a consistent amount of energy. Similarly, a pellet with too large a head will not perform as well as it should because the rifling in the bore will grip the ammo too tightly, adding friction.

WEIGHING IT ALL UP

Just as a typical tin will contain pellets of contrasting head sizes, it will also contain ammo of varying weights – which will give different velocities when fired. Weighing individual pellets is, if anything, even more tedious than checking their head size, but it is necessary to ensure consistency.

Electronic scales have quite a bit of trouble weighing extremely light objects to within a few hundredths of a grain. A typical set of pellet scales is not that consistent – the very opposite of what we're trying to achieve! If you weigh a pellet, remove it and weigh it again; the chances are you will get a close, but not identical, result to the first measurement. For this reason I like to zero the scales and then take only one reading per pellet. My scales were bought on eBay, but I've tried weighing pellets with a far more expensive set of scales meant for measuring smokeless powder for my centrefire rifles and achieved no better results. Nevertheless, both sets of scales are certainly accurate enough to identify the very heaviest and lightest pellets in the batch. These will be used for plinking rather than competition shooting or hunting.

IS IT ALL WORTH IT?

If you employ all four pellet prep techniques then you have your work cut out. It takes a long time! Washing and lubing is straightforward enough, but sizing and weighing take ages. If you start off full of good intentions to prepare a whole tin, the chances are you'll end up getting bored halfway through. To preserve your home life it may be best to prepare a smaller batch of just 50 pellets at a time.

So, after all this effort, you have a batch of pellets that should perform far better than those straight from the tin. Find a wind-free day and shoot a few groups with some pellets that haven't been pampered. Then try a few groups with your lovingly prepared match-grade ammo. See the difference and smile!

Accurate ammunition is one step on the journey to ensure your rifle is an accurate rifle. Any errors or disappointments will be down to other factors, such as rifle set-up or shooting technique. You can now be confident that you are shooting with the very best pellets available for your rifle. ●

TOP TIPS FOR: PERFECT PELLETS



Dry pellets by gently swirling them round in your sieve so the water can run off or evaporate. This will ensure every pellet in the batch is warmed and dried evenly.



Drip lube onto your microfibre towel and roll the pellets in it. Pouring lube directly over ammo is too imprecise, leading to inconsistent weights and performance.



If I'm taking part in a competition or trying to shoot a group I will use my Pelletgage to select one specific size and hold the remainder over for plinking.



The pellets in a tin never have exactly the same weight, so determine the average by weighing them and put any that fall outside a chosen range into your plinking pile.

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TECHNIQUE

Shooting secrets 44
How to set up both your shooting kit and yourself for the ultimate in airgun accuracy

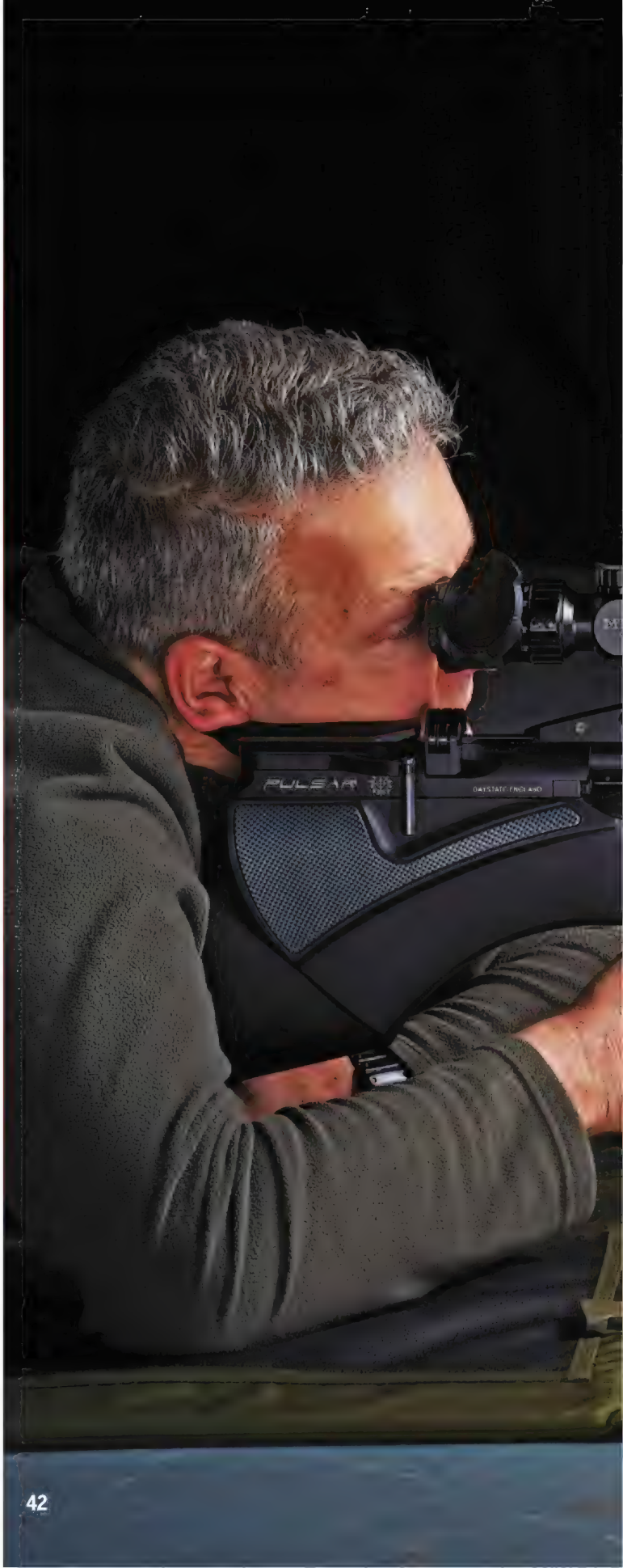
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Properly setting up your scope is vital if you're to achieve optimum results from your shooting session

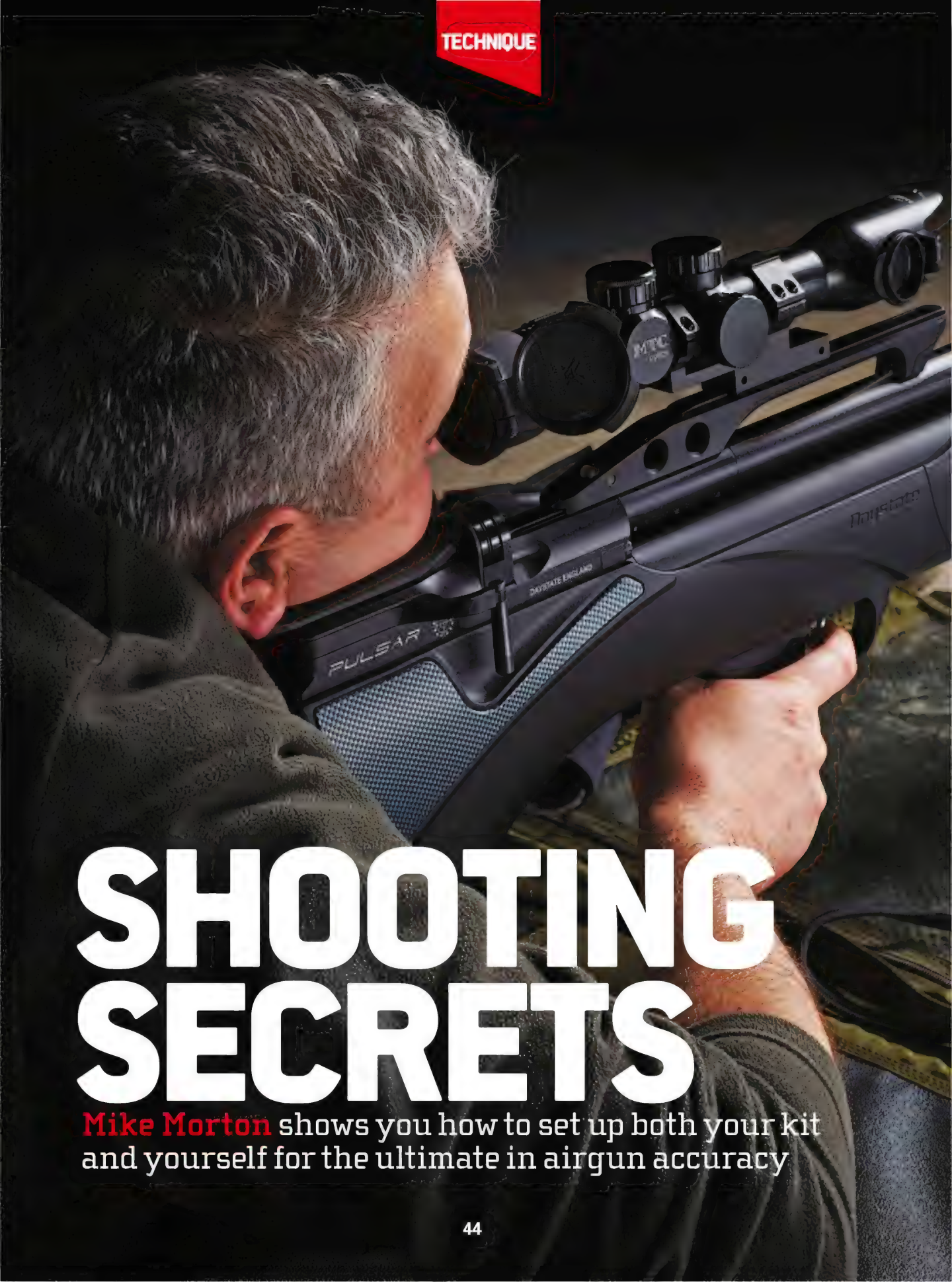
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Daystate



SHOOTING SECRETS

Mike Morton shows you how to set up both your kit and yourself for the ultimate in airgun accuracy

You're in position. You're relaxed and ready to take the shot. The target's clearly visible and in focus. With your breathing under control you slip off the safety catch and gently apply pressure to the trigger. You fire, sending the pellet on its way. It looks to be the perfect shot, but you miss – it's a flyer!

What's worse than having a flyer? Not understanding why the shot's gone awry for one. We've all taken shots like these, and the reason is down to one of three things: shooting technique, rifle/ammunition set-up or environmental factors such as wind. But don't worry; as part of our mission in this handbook to help you develop an accurate rifle, we're here to help turn things around and make those pellets fly true.



THE 5p PIECE TEST

Most modern rifles should be capable of producing a one-hole group that fits under a 5p piece at ranges of 30 yards or less when shot from a rested position.

THE ACCURACY QUEST

What is accuracy? It's the ability to send a projectile, in this case a pellet, to a specific point, be it a 10-bull on a paper target, a knockdown plate in an HFT contest or a rabbit's brain in the hunting field. However, it's not enough to do it just once because that could be put down to luck. True accuracy is placing a pellet exactly where you want with reliable, consistent and repeatable results. I liken shooting to golf when explaining it to non-shooting friends. Both sports are about precise shot placement. Airgun shooting is just golf with attitude.

Trigger set-up. Scope mounting. Ammo selection. These are just three ingredients of the accurate rifle that need to be looked at in detail. But to get you started – or at least get you thinking – here are a few useful tips to help minimise those flyers and maximise those grins!

HAPPINESS IS A CLEAN GUN

If you want to get the best out of your kit then you really need to spend time maintaining and looking after it. In the case of a rifle let's take a close look at barrel cleaning and your general rifle cleanliness.

Do airgun barrels need cleaning? Some people will argue no, but all barrels will need to be cleaned at some stage or else accuracy will drop off – that's a fact. If you have a new rifle then you should clean the barrel even before you fire the first shot because the manufacturer may have coated the bore with oil or grease for storage purposes. A totally clean barrel does actually need a few shots



TEST! TEST! TEST!

It's important to test pellets to find the right one for your rifle. Both JSB Exact and Exact Express have turned in some pretty good groups here.

down it before it reaches optimum performance, but if you keep shooting without cleaning, eventually those groups will start to open up. Accuracy will suffer.

Take the time to clean your gun thoroughly every time you use it. Use a clean toothbrush to remove any crud that might otherwise be interfering with the correct operation of your gun. Is there any grit in the trigger? How about the safety catch? What about the breech? Removing dirt, dust, grit and grime isn't just about aesthetics, it really will keep your rifle in good working order. It's also a chance for you to take a thorough look at your gun, giving it a visual MoT as you do so. Is that a split O-ring? Is a crack developing in the woodwork?

If you have a rifle with a blued barrel, always make sure you wipe off any fingerprints as soon as you can, otherwise that bluing may turn rusty. And whether or not it's blued, if your gun's been out in the rain wipe it down with extra care.

If you have a shrouded barrel consider removing the shroud and check for any rainwater underneath. Remove the stock and see if there's any water there as well. Store your freshly cleaned and dried rifle carefully, preferably in a warm, dry and safe place.

ADJUST YOUR TRIGGER

When you take a shot that pellet should fly down the barrel when you want it to. That might sound obvious, but how many times have you seen a look of surprise appear on a fellow shooter's face after the rifle went off when they weren't expecting it? This may well have been because the trigger was too heavy or too light. A heavy trigger will have you squeezing harder and harder, with muscles quivering and muzzle wobbling, until that pellet finally gets sent on its way. This is going to hurt accuracy.



An adjustable trigger blade isn't essential, but can give you an edge when trying to squeeze every last bit of accuracy from your rig.

GET COMFORTABLE

Whichever shooting stance you use, make sure you are as relaxed as possible. You're relying on skeletal support, not muscles which will quickly tire.

Airguns, of whatever calibre, are all about the art of finesse, not brute force.

Similarly, you do not want a trigger that goes off when you merely place the pad of your finger on the blade – that's just dangerous. You need to find a happy medium that's right for you. Thankfully, most manufacturers know this, and out-of-the-box trigger weights are pretty good these days. If you do need to adjust your trigger please make sure you know what you're doing, and if you don't then take it to your local gun shop or club so it can be adjusted safely.

Make sure your trigger passes the smack test after it's been adjusted, regardless of who did the work. Cock the rifle, aim it in a safe direction and whack the butt with your hand.

"A HEAVY TRIGGER WILL HAVE YOU SQUEEZING HARDER AND HARDER, WITH MUSCLES QUIVERING"

Try this with the safety catch on and off. If the gun goes off the trigger has been set far too light. You should do this test without a pellet in the breech if you're using a PCP; however, you risk damaging your rifle if you dry-fire a springer so double-check the area is safe and load a pellet for the test. If the rifle passes the smack test no shot will be fired; but if it fails that pellet will be released. You must ensure you have a safe backstop for either eventuality. This is actually a good test to get into the habit of doing on a regular basis, regardless of whether you have recently adjusted your trigger.

SCOPE SUCCESS

Ensure the scope on your rifle has been set up for you, not for someone else. This happens more often than people think. Did you get someone to do it for you who carried out the work themselves before simply handing it back to you? Did you buy a rifle/scope combo that had already been set up by the shop or manufacturer? Setting up a scope for you means both eye relief and the fast-focus ring have been adjusted to suit your own eyesight, not someone else's.

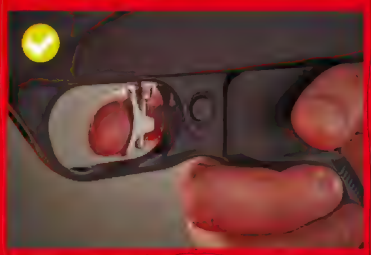
Clean the outside of the scope tube and rings before installation to ensure they are free of grease, oil or anything else that could cause the scope to either twist or move backwards and forwards with use. And make sure the reticule is perpendicular to the action. Consider using a spirit level to set up the scope. Also consider mounting a level to your rifle to use as a shooting aid and conquer cant, although you should be aware that this is not allowed in some target disciplines.

Use a torque wrench to correctly tighten your mounts to the rifle and the top rings to the lowers, following the manufacturer's torque recommendations. Under-tightening the scope mounts could lead to the scope

HOW TO: TAME THE TRIGGER



Pulling the trigger with the joint of your finger will certainly release the shot, but it won't give you the control you need for a truly precise effort



The angle and height of the trigger blade have been adjusted to present itself properly to the pad of the trigger finger, providing perfect control

THE BEST GEAR FOR BARREL CLEANING

DIFFERENT cleaning techniques can be used in different situations. **[1]** The traditional barrel cleaning rod, jag, patch and brush are overkill for airguns. Bad cleaning techniques can do more harm than good. **[2]** The pull-through, used in conjunction with a cleaning patch, is excellent for fixed-barrel rifles and ensures the barrel is cleaned in the right direction – from action to muzzle. **[3]** Felt pellets are a quick and easy way to maintain the right amount of leading in your barrel. **[4]** A BoreSnake is a great tool for break-barrel rifles and some underlevers. Just remember to use the airgun-specific version, which comes without the embedded metal brush, which is unnecessarily harsh and could pull out a breech seal O-ring.







Shoot a minimum of 20 of each type when testing pellets and try to break your testing down into chunks to take fatigue out of the equation

shifting while over-tightening could damage the scope. By tightening the ring screws in an X-pattern, you will ensure an even spread of tension across the scope tube and keep everything in good condition.

Scope covers are a great idea to prevent your lenses from accumulating dust and dirt as well as protecting them from the rain. Most scope lenses that end up getting scratched are usually damaged by over-zealous cleaning. So keeping them grit-free in the first place, and therefore reducing the need to clean the lenses, will minimise the chance of any damage. Just don't ask me how I know!

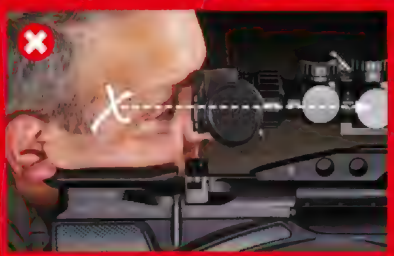
BE A HERO – PROPERLY ZERO

I use a laser bore-sighter on my rimfire and centrefire rifles, where a single cartridge can cost £1 or more, but pellets are cheap in comparison and so my air rifles aren't treated to this luxury. If you want to use one, then great – but it's ultimately quicker and easier just to get out with your airgun and shoot at a paper target.

When you zero your rifle try to shoot it from as stable a platform as possible. You can use a bipod, shooting bags or a shooting rest if it's a PCP. If you are able to shoot at an indoor range, away from the wind, then so much the better. If not, try to choose a still day. Remember: at this stage all you are trying to do is set your zero, not test your marksmanship skills or ability to call the wind. That comes later.

It's a good idea, wherever possible, to do a rough zero at a fairly short range, say about 10 yards, where you can easily see where your initial shots are falling. Once you're in the ballpark you can fine-tune your scope adjustments at your chosen zeroing distance, which will depend on the type of shooting you plan to do. My typical hunting and garden plinking zero is 30 yards, for example, but yours could be very different.

HOW TO: GET THE RIGHT LINE OF SIGHT



Your head and eye position is crucial to accurate shooting. Even though the eye line is only slightly off in this picture, it can still be enough to induce parallax error.



The head and eye are in perfect alignment with the centreline of the sight. Good gun fit and use of correct mounts will ensure this position is comfortable and repeatable.



running at 30ft lb or a regular legal-limit rifle that's operating at 11ft lb, the key to using this available power is consistency – and you will need to shoot your rifle over a chronoscope to determine exactly how consistent it is. The information gleaned here will tell you the muzzle velocity of your preferred ammo and (as long as you know the pellet's weight) will also tell you the power output of the rifle. Don't forget that if you change pellets your results will also change, so you'll need to chronoscope your rifle again.

Many people I know are happy to take 10 sample shots over a chrono, but I prefer to shoot at least double that to give a more representative spread. And if I'm trying to plot a power curve on a PCP, it could be around 100 shots or more. In terms of general results, a variation of less than 20 feet per second (fps) is regarded as good, with a spread under 10fps viewed as an exceptional performance.

I tested two of my own rifles to double-check my results while preparing for this article. I shot two types of pellet with my Daystate Pulsar, getting a 4.5fps spread with JSB Exact Express and an 8.0fps spread with Air Arms Diabolo Field. I shot only one type through my tuned Weihrauch HW 97, getting a spread of 4.6fps with Exact Express. Needless to say I was a very happy man indeed.

"IT'S A GOOD IDEA TO DO A ROUGH ZERO AT A FAIRLY SHORT RANGE, SAY 10 YARDS, YOU CAN EASILY SEE WHERE YOUR INITIAL SHOTS ARE FALLING"

AMMUNITION MISSION

Rifle barrels are fickle: they prefer certain pellet types to others, and even different head sizes within that same pellet type. You're on a mission to find out which pellets shoot best in your rifle.

First of all, you need to decide what level of accuracy you're really looking for. Be honest with yourself and your kit, and be realistic about your expectations. Are you happy with a five-shot cluster at 25 yards that can be covered by a 10p piece? Are you looking for a 45-yard group that fits under a 5p coin? Remember: be realistic!

Once you know what you're trying to achieve then you'll know when you've found a suitable pellet. Chasing the holy grail of airgun accuracy – a one-hole group that doesn't take up much more room than a single pellet's width – gives you an incredible feeling when you do achieve it, but can be soul-destroying when you don't. It's not always desirable or necessary to aim for this, though.

Be prepared to test plenty of pellet types. This can get expensive if you are planning on buying a whole tin of each kind or head size to test. Try buying a sampler pack or sharing the cost of a few tins with some fellow shooters. Shoot a minimum of 20 pellets of each type before passing judgement on them. Then take a break! Pellet testing, while seemingly boring, is mentally demanding and will leave you feeling pretty tired. If you find a bad pellet, make sure it's because of incompatibility with your barrel rather than any mental or physical exhaustion on your part.

You've put in a lot of effort so far to help make your rifle shoot as accurately as possible. Now it's time to hone your own skills, and that means practising your technique as much as possible. Even if it's too wet or windy outside to shoot for real, you

Fire a five-shot group and find the centre of that group before making any elevation or windage adjustments. If you adjust your scope after each individual shot you could find yourself chasing the bull all day. Instead, find the group average and make adjustments based on that.

By this time you should be getting some fairly consistent groups, but you may not be getting the super-accurate results you crave. This is perfectly normal. Even a totally supported rifle shot in perfect, windless conditions may not group well if it is using sub-optimal ammunition or its power is somewhat inconsistent – and that's what we'll turn our attention to next.

POWER TO THE PEOPLE

It doesn't matter whether you're shooting a rifle held on a Firearm Certificate that's



JARGON BUSTER

FLYER: A shot that goes wild, but that doesn't mean the reason for it can't be pinned down. Flyers are usually blamed on a rogue pellet or shooter error. Our mission is to eliminate them.

BLUING: A chemically applied finish to metalwork that offers protection against rust. It's a traditional finish that looks great when properly applied, but gives less protection than more modern finishes.

PARALLAX: Where the images of the target and reticule appear on the same plane inside a telescopic sight. Poor head and eye position can be offset by ensuring you have correct parallax.



Using two spirit levels – one on the action of the rifle and one on the scope – means your sighting system is set up to eliminate cant.

READY FOR ACTION

When shooting, try to ensure everything you need is to hand, but make sure it doesn't get in your way. You don't want any distraction when taking that crucial shot.

can still heft your unloaded and uncocked rifle and go through the motions of taking a shot. This will really help boost muscle memory. Most of us will have a preferred shooting stance. For a long time I took nothing but prone shots, and almost had to be prised off the ground by my shooting buddies and encouraged to shoot in different positions. It worked. I now really enjoy taking kneeling and sitting shots.

I never quite mastered standing unsupported, but regularly practise with shooting sticks. Being taken out of my comfort zone has ultimately been to my benefit and I now take even more enjoyment from the sport. And, of course, for many target sports, such as HFT, you'll have no choice but to shoot from a variety of positions. And that's all to the good.

"EVEN IF IT'S WET OUTSIDE YOU CAN STILL PRACTISE BY HEFTING YOUR UNLOADED AND UNCOCKED RIFLE"

Working your way through the tips listed above may sound like a lot of hard work, but it all depends on how you define work. I try to break down each section into an activity in its own right, not just a means to an end. Bite-sized chunks are always more tasty than shovelling down a whole meal in one mouthful. Time management is also crucial when trying to get the balance right between hobbies, family life and work. I genuinely enjoy cleaning my guns, for example. As long as I have allocated enough free time it's a pleasure not a chore. But, like most things in life, if you're forced to rush something it will increase your stress levels and probably decrease the effectiveness of what you're trying to achieve. If you find you're not enjoying yourself then take a break and come back to it later.

For most of us shooting is a hobby, and hobbies are meant to be fun. When it all comes together and you manage to achieve the results you want, all those hours of practice and preparation will pay you back. Fun? Oh yes! ●

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HOW TO: TIGHTEN THINGS UP



A torque screwdriver will let you tighten everything correctly. Scopes can easily be damaged by over tightening, but under tightening is an enemy of accuracy, too.



It's best to tighten the scope mount screws to the manufacturer's recommended torque settings and work in an X-pattern, like changing the wheel on a car.

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STRIKE A POSE

Much is written about the effect your choice of rifle and scope, and the way you choose to configure each, has on your shooting accuracy. But pinpoint targeting starts in your body, and the stance you adopt to keep your barrel steady. Mark Camoccio suggests five rock-solid poses



POSITION YOUR RIFLE
Ensure that the rifle's butt pad is firmly in the shoulder at the right height, because everything will stem from this. A consistent approach is the key throughout.

STAY COMFORTABLE
Comfort trumps all. It really is pointless trying to pull a leg into a certain position if it causes, pain, strain or discomfort.

SUPPORT YOUR ELBOW
Nestle the elbow of the leading supporting arm into the small hollow of the extended supporting knee. This should feel comfortable, and with practice become second nature.

MAINTAIN WIDTH
To achieve maximum stability, it's important to maintain the width of the position overall. To achieve this, ensure that the knee making contact with the ground is turned a good distance outwards, away from the body.

DISTRIBUTE YOUR WEIGHT
Ideally the weight should be transferred to the front supporting knee, which in turn helps to anchor the position. However, with many competition targets laid out across uneven terrain, the best of intentions can be quickly undermined!

POSE #1

KNEEL LIKE A PRO

The challenge of compulsory positional shots can be the deciding factor in HFT and FT competitions – and there's a real art to kneeling properly so that you're in control

EXPERT TIP: KEEP YOUR FRONT LEG STRAIGHT

THE front supporting leg should be straight down, which will send all the weight downwards into the ground. By staying straight, the leg provides a stable support; place it at an angle and the position is compromised. If the knee is too far back, the weight distribution will be placed too far to the rear; put the knee too far forwards and your position will likely collapse.





REPETITION IS GOOD
Mount the rifle's butt pad into your shoulder in exactly the same way, and at exactly the same point, every time. And grip the gun in the same way each time to help achieve consistent performance.

GET LOCKED IN
Lock the front elbow into the hip so it sits just on top of the bone. It may feel alien at first, but in time, and with regular practice, this position will prove highly effective.

SUPPORT THE LEADING ARM
Push forward the front hip in an exaggerated arc to support the leading arm, which will lock everything in place. This will create a stable platform.

STRIKE A POSE
Stand completely side on to the target and temporarily look ahead to check your position. Swivel your head to the left (if you are right-handed) and face the target, ready to adopt the position.

SPREAD THOSE LEGS
Space apart the legs to roughly the width of your shoulders to maintain a stable and controlled position. If you still feel unstable, shuffle your legs apart a little more, while taking care not to spread them too much.

POSE #2

STAND LIKE AN OLYMPIAN

It's the hardest position of all to adopt, and the bane of numerous FT and HFT shooters. But these techniques should shed some light on the most reliable way to stand and deliver

EXPERT TIP: CREATE A FIRM RIFLE SUPPORT

THE front or leading hand will create a vital support between you and your rifle. The leading hand can provide various types of support, such as a fist, upturned fingers or even a reverse hand grip (where you twist the lead hand and cup it around the stock). The final choice is yours.





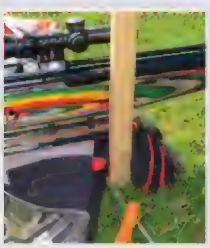
POSE #3

ADOPT THE PRO'S PRONE POSITION

Prone is the most prevalent freestyle position in HFT, so getting it right can give you that crucial competitive edge

EXPERT TIP: GIVE YOURSELF A HELPING HAND

HFT rules dictate that the shooter has to touch the peg with some part of his or her body while taking the shot. Ensure your leading hand both supports the gun and locks your position. Whenever possible, stay flat on the ground to ensure maximum stability, and (if right-handed) push into the left side of the peg.





POSE #4

THE OVER-ARM FT SITTING POSITION

Field Target allows you to sit for most freestyle shots along the target course, and many top shots use the off-the-knee stance. But there is an alternative...

EXPERT TIP: LOCK INTO PLACE

IF possible, make sure that the arms interlock, as this pulls everything together, and brings rigidity and stability to the position. I've always found this position brilliantly stable, but long arms and legs certainly help! If it doesn't feel comfortable or it feels strained and awkward, then don't force it: other sitting positions can be just as effective.





POSE #5

SHOOT OFF THE PEG IN HFT

Hunter Field Target presents the shooter with a variety of awkward shots – occasionally requiring an imaginative approach. It pays to have this shot in your armoury when you're given an unusual challenge

EXPERT TIP: CREATE A HAND SUPPORT

THE front support hand is a key aspect of the off-the-peg shot. Imagine the bridging position made by the hand in snooker, and you won't go far wrong. The support hand is raised up, and all the fingertips are pushed down hard, so that the tips bend outwards. The support becomes surprisingly rigid. Rest the rifle and take the shot.



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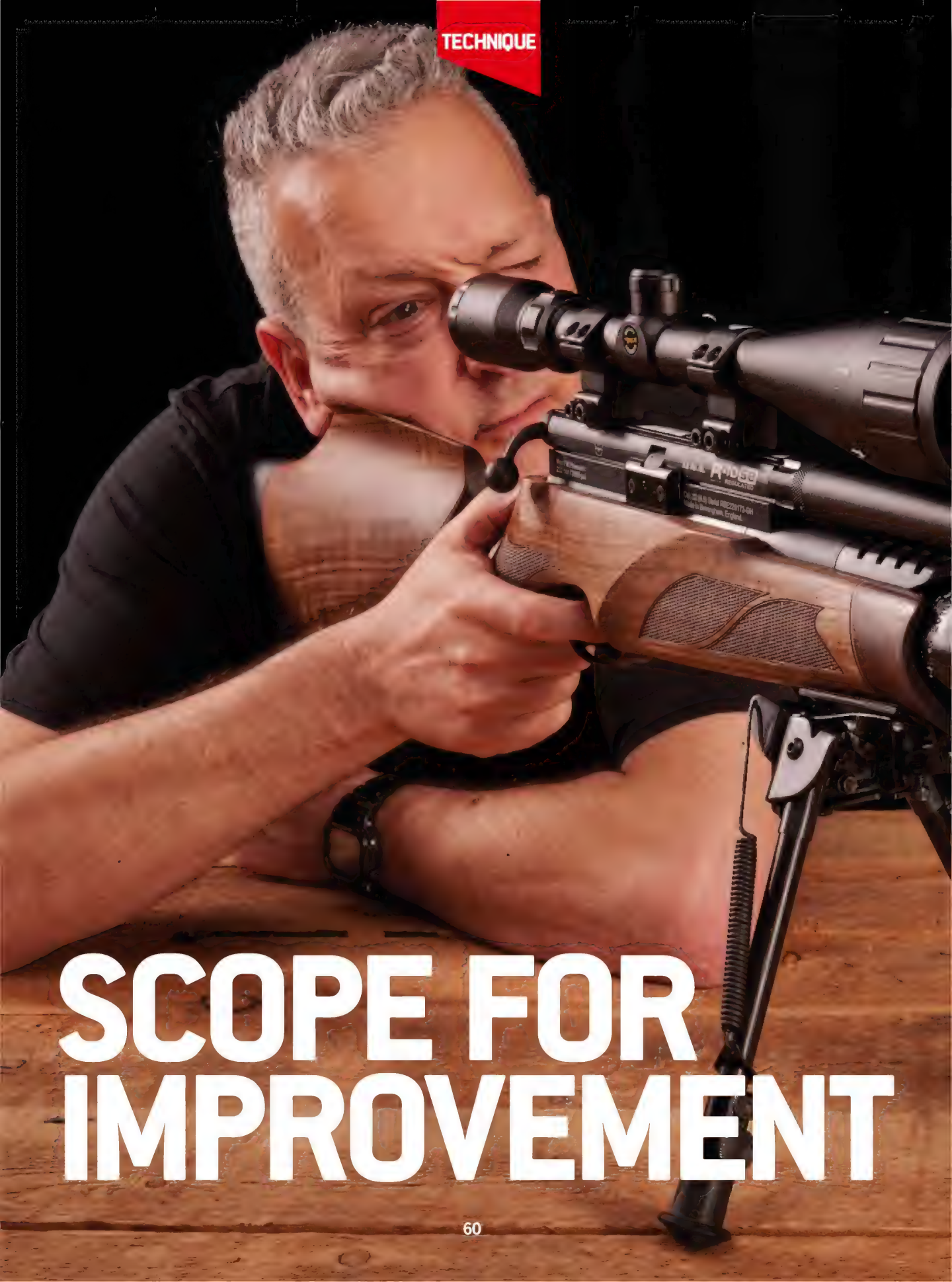
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SCOPE FOR IMPROVEMENT

Properly setting up your scope is vital if you're to achieve optimum results from your shooting session. Mike Morton explains the best way to tackle this sometimes tricky task

Some people, early on in their shooting careers, will either use a rifle with a telescopic sight already attached or ask someone to fit one for them. In both cases the scope and mounts may have been fitted properly to the rifle, but there's no guarantee the shooter will do well with that set-up if it hasn't been specifically tailored to them.

One of the best ways to illustrate this is to compare a premounted scope with buying a new car. Would you jump in and drive it away without adjusting the seat or mirrors? You could drive the car that way, certainly, but you definitely wouldn't be driving it as well as you could. Whether your rifle's destined for the garden, the range or the hunting field, you will always shoot it better if it's been set up just for you.

LET'S GET ORGANISED

There are a few things to consider before you begin mounting a scope. First of all, ensure the rifle is safe. That means the magazine, if it uses one, has been removed, no

SCOPE OUT AN AREA IN WHICH TO WORK

CLEAR a work space where you won't be disturbed and get everything ready. [1] Safety first! Make sure your rifle is unloaded and uncocked before you start. [2] You'll need something to keep the rifle level. A gun cradle is ideal, but gun bags or a bipod can also be used to good effect. [3] If you want to use scope lens covers on your completed rig then you'll need to make sure the mounts you've chosen give you enough room between the cover over the objective lens and the barrel. [4] Prep your mounts by removing the upper rings. Keep track of the orientation of the uppers and their screws.



pellet is in the breech and the rifle is not cocked. Secondly, you need somewhere to rest the rifle while you're working on it. If you have a bipod fitted this can often be used as long as it's a swivel type that can be adjusted so the rifle sits perfectly level.

I prefer to use a gun rest or cradle, and the type I use more than any other is the Gunsmith Maintenance Center from US firm MTM. This features rubber butt and forend rests that can be positioned in a variety of ways to ensure your airgun sits level. If you happen to shoot rimfire or centrefire rifles as well as your airguns, the rest can be used to position your rifle with the muzzle pointing slightly down, which aids cleaning.

The next thing to consider is the mounting system present on your rifle. The vast majority of airguns have a dovetail rail, so called because when looked at end-on they resemble the shape of a bird's tail. Dovetail rails, while looking similar to one another, are not always the same size, however; the majority of dovetails are between 9.5mm and 11.5mm long, while some manufacturers use wider 11-13mm rails. It's important to use the right size otherwise the mounts will not sit true to the action. Sportsmatch makes dedicated mounts for these wider rails along with the more usual narrower variety as well as brand-specific mounts.

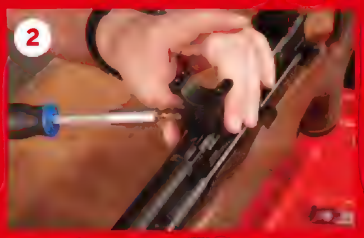
Dovetails are not the only mounting system that can be used. Weaver and Picatinny rails are slowly becoming more common in airgun use, especially on bullpup rifles. These two systems are similar, but not identical, and utilise a pair of parallel rails and several slots perpendicular to them. The main difference is the spacing between these transverse slots. This is only a problem, however, if you try to use a one-piece Weaver mount on a Picatinny rail or vice versa – they won't fit. But if you use two-piece mounts then you can mix and match between the two.

Which system is best? Dovetails

HOW TO: INSTALL LOWER MOUNT RINGS



The dovetail rail on this BSA R-10 SE runs the whole length of the receiver and is not fouled by the magazine. This means you can optimise the location of the mounts.



Don't tighten the lower rings too much at this stage as you may have to relocate them slightly when trying to achieve correct eye relief later on in the mounting process.

GIVE YOURSELF ROOM

The way the lower rings are initially mounted to the rail will determine how much room is available when sliding the scope to determine correct eye relief.

are more commonplace, meaning there's a greater choice of mounting options. They are lighter and less bulky than the Weaver/Picatinny systems, and arguably more aesthetically pleasing. Weaver/Picatinny rails offer a more solid mounting system that copes better with recoil – which is important for springers. They also let the shooter swap scopes and mounts more easily, with an almost perfect return to zero. If you have a rifle with one system and want to use the other then you can use an adapter. This, of course, will add weight and height to your rail system as well as adding to the cost. The choice is yours.

SINGLE OR DOUBLE?

The next thing to consider is whether or not you want to fit one- or two-piece mounts. One-piece options offer a greater clamping area on a rail and are more resistant to recoil. For this reason, these mounts are often the preferred choice on springers and gas-rams. The downside is the fact that they are usually bulkier, heavier and more expensive, and not necessarily the best choice on a springer if it's been tuned or is otherwise mild-mannered with respect to recoil. Some

"YET ANOTHER POINT TO CONSIDER IS THE DIAMETER OF THE BODY TUBE OF THE SCOPE THAT YOU'RE INTENDING TO MOUNT"

rifles simply cannot take one-piece mounts, notably those with a magazine system that sits higher than the rail. Two-piece types offer more flexibility when mounting a scope as they can be better positioned to clear the scope objective bell or central saddle.

Two-piece mounts may be termed double- or single-strap. This means each mount, fore and aft, may feature either one or two securing screws each side, with doubles being wider and therefore providing a greater contact area with the scope tube. With a springer you may be better off with double-strap mounts, but for PCPs shooting at non-FAC levels singles are absolutely fine. Again, it's down to availability, cost and personal choice.

RIGHT SIZE, RIGHT BODY

Yet another point to consider is the diameter of the body tube of the scope

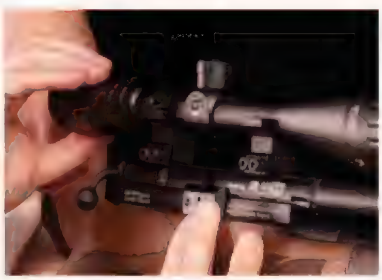
EASY DOES IT

Place the scope gently in the lower rings. Check the objective bell clears the barrel and the saddle doesn't interfere with the magazine. No problems here!



Fit one or both sets of upper rings, but only loosely at this stage. The idea is just to stop the scope from falling out when the rifle is shouldered.

FINE-TUNE FOR EYE RELIEF



EYE relief is the distance from the rear lens within which the shooter can achieve a full viewing angle. In practice, this means sliding the scope backwards and forwards until a perfectly clear image can be seen.



IF you see a half-moon effect, this means you are partially looking at the inside of the scope tube and have not got correct eye relief. Ensure the scope is on its lowest magnification and keep adjusting until eye relief is right for you.



NO GREASE GUNS HERE

A cotton bud dipped in a solvent such as rubbing alcohol can be used to ensure all contact points are clean and free of any chemical contaminants or other debris.

that you're intending to mount. Almost all scopes slated for airgun use will measure either one-inch (sometimes referred to as 25mm) or 30mm, and you must use the correct set of mounts to match.

The final consideration is the height of the mounts. A general rule is to use the lowest set of mounts you can get away with. This means making sure the objective lens of the scope doesn't touch the barrel, and that includes the front scope cap if you intend to fit covers. You must also be able to insert and operate a magazine, if your rifle uses one, without it being fouled by the scope.

You may well come across the terms 'low', 'medium' and 'high' when researching mounts. Be careful here, because there is no industry standard and 'low' for one manufacturer may well be 'medium' for another (BKL is a good example of this).

"THE FINAL POINT TO CONSIDER IS THE HEIGHT OF THE MOUNTS. USE THE LOWEST SET OF MOUNTS YOU CAN"

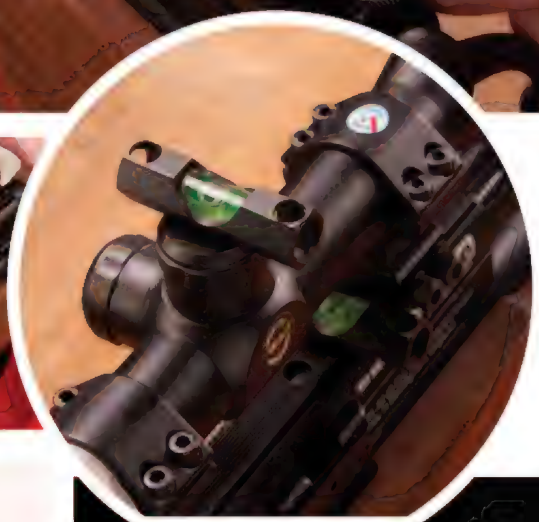
If you are ever uncertain when choosing scope rings contact the retailer or manufacturer and tell them your rifle type and the kind of scope you want to mount to it. The size of the scope's objective lens – typically 40mm, 50mm or 56mm – will usually be the deciding factor.

READY, STEADY, GO

You've now gathered your chosen scope, rings and rifle, and are ready to assemble them into an accurate shooting rig. Most mounts will come with a set of hex or Torx keys, or just a single key if the base screws are similar to the ring screws. I like to remove the upper rings first, keeping track of each screw and the hole it came from. I use a cotton bud dipped in rubbing alcohol to swab out the screw holes and clean the screws themselves of any manufacturing oil or debris. The inside of the rings should also be swabbed clean.

Many springers will have a hole in the top of the action block to take a recoil pin in the rearmost mount. Some mounts, such as those from Sportsmatch, come with a separate post while others, like those from

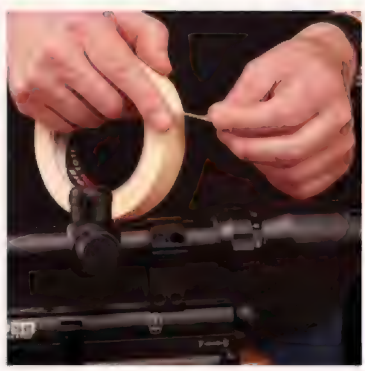


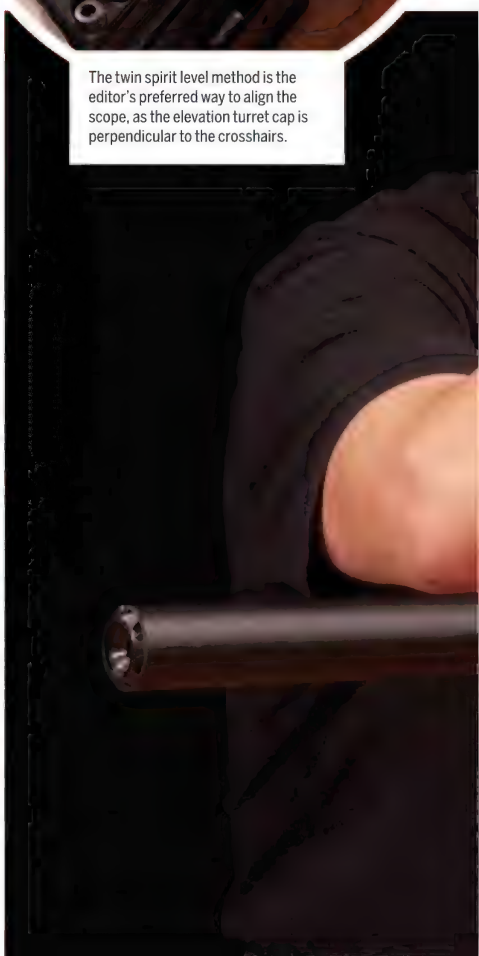


The twin spirit level method is the editor's preferred way to align the scope, as the elevation turret cap is perpendicular to the crosshairs.

GET MASKING

ONCE the final position of the rings on the rails has been worked out you can then tighten them down properly. Masking tape can be used to mark the fore and aft orientation of the scope, which now needs to be removed before the lower rings are torqued down onto the rail. It's not a good idea to do this job with the scope in place because it will put unnecessary stress and strain on the scope tube. With the mounts tightened, the scope can be fitted back into the lower rings, using the tape to align it.





Hawke and Optisan, may feature a cone-shaped device that fits into the hole.

The next stage is something of a balancing act, especially with two-piece mounts. The optimal fitting method is to have them as far away from each other as possible, offering maximum support to the scope tube. However, you may need to adjust the position of both mounts to get good eye relief. Locate the mounts in roughly the right place on the rail, then snug the screws down just enough to hold the mounts in place. Next, lay the scope in the lower rings and shoulder the rifle, pointing it in a safe direction. If you're worried about the scope tumbling to the ground then fit the upper rings, but do so very loosely – you'll need to move the scope backwards and forwards until you have good eye relief. If you run out of room you'll have to loosen and reposition one or both of the mounts.

It's best to turn the magnification on the scope right down when you do this. Once you've got the mounts in the right place, turn the magnification as high as it will go and fine-tune the position of the mounts. With higher magnification scopes it's not always possible to get absolutely perfect eye relief in all shooting stances; in this case pick the position – prone, standing, sitting, kneeling or bench-rested – from which you intend to shoot the most and fine-tune your eye relief based on that.

SHOULDER ARMS

Now close your eyes, shoulder the rifle and open them: eye relief should now be perfect. If you have to move your head backwards or forwards then you haven't got correct eye relief. Slide the scope tube backwards or forwards until it's correct; if

HOW TO: GET ON THE LEVEL



You can use a plumb line or larger spirit level to confirm you've properly set up the scope to avoid cant (having a tilted rifle or tilted scope without realising).

Line up your horizontal crosshairs with the level, then check the rifle itself is level using one of the small bubble levels. Cant is a true enemy of accurate shooting.



NEARLY THERE

When the bubbles in both spirit levels are aligned the scope has been properly levelled and the rings can be tightened. Tighten the screws a little at a time.



> "THE TURRET CAP METHOD IS A FOOLPROOF WAY OF ACCURATELY LEVELLING THE CROSSHAIRS"

STRIKE THOSE STANCES

Check the full range of magnification your scope has to offer. Eye relief is far more critical on high mag. Also check for good eye relief in various shooting stances.



Mounts need to be low enough to achieve a good sightline, but high enough so the scope clears both the barrel and magazine.

you run out of room you'll have to move the mounts themselves.

Once you're happy with everything you can secure the bases to the rail, preferably using a torque screwdriver and sticking to the manufacturer's recommended settings. You also need to decide whether or not you want to use threadlock; if you do, make sure you use the non-permanent blue type. I prefer to shoot the rifle for a while before adding threadlock, making sure the mounts are exactly where I want them before locking those screws in place.

BUBBLES, NOT TROUBLES

With the mounts fitted and the scope adjusted for eye relief it's time to level the crosshairs. This is a job I like to do using two small spirit levels. Firstly, use one to make sure the rifle itself is perfectly level. Next, gently rotate the scope, taking care not to move it backwards or forwards, with the second spirit level resting on the turret cap. Rotate the scope until the bubbles are centred on both levels. The turret cap method is an almost foolproof way of accurately levelling the crosshairs. You can always double-check afterwards using a plumb line, but I've never needed to go back and readjust.

It's now time to snug up the screws on the upper rings. To do so, use an X-pattern to tighten them slowly and evenly. Refer to the manufacturer's recommendations if using a torque screwdriver, but if you don't have one then hold the hex or Torx key by the short end – this should ensure you don't overtighten the rings, potentially crushing the scope tube. There will be a gap between the upper and lower rings – this is normal; do not try to close the gap! If you have been tightening evenly, the gaps will also be even both sides; if they're not, adjust the gaps by loosening the screws on one side and gently tightening them on the other, all the while keeping those spirit levels level.

Your final task is to check everything over. Shoulder the rifle and check eye relief once again. Are the horizontal crosshairs still level with the action? Have you correctly tightened every screw? If you encounter a problem at this late stage, and after all that hard work, it's tempting to shrug it off and just settle for what you've got. Maybe the scope's not truly level after all. Maybe eye relief isn't as good as you thought it was. It's much better to tackle problems like these now and get that scope set up perfectly. You'll thank yourself later!

When you're perfectly happy the scope has been correctly mounted you can afford to relax. Your rifle and scope combo is now ready to be zeroed., but that's something we'll take a closer look at another time. ●



When tightening screws, work in an X-pattern to ensure even pressure. The gaps between the upper and lower rings should be even.

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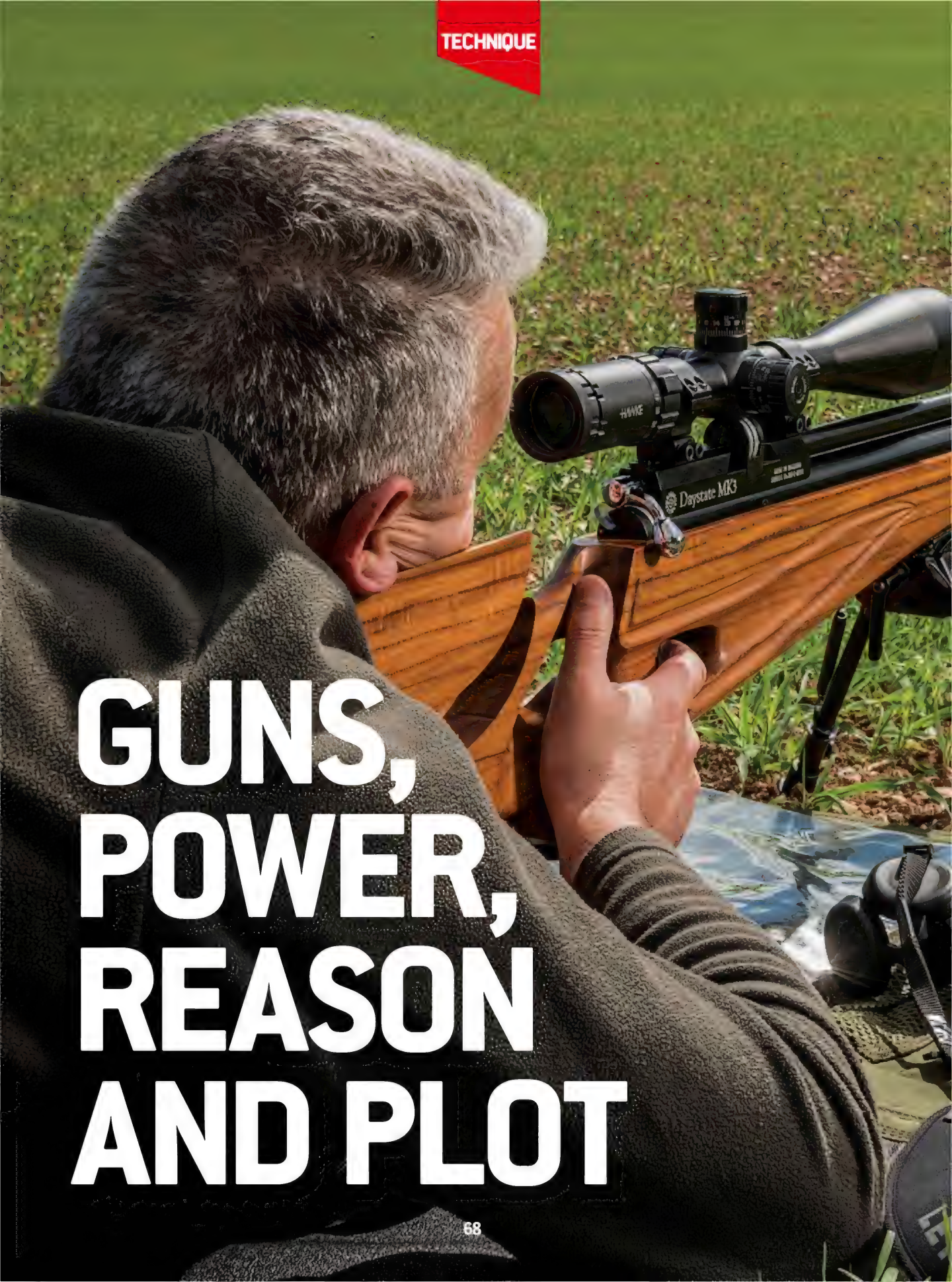
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* Source: Airgun Shooter; Airgunner magazines



GUNS, POWER, REASON AND PLOT



Mike Morton examines airgun powerplants and velocities – and reckons that if you feel the need for consistent speed, you'd better be prepared to break out a notebook and pencil when shooting a PCP

The other day I overheard a discussion where people were talking about airguns, during which someone compared them with "real" guns, meaning powder-burning firearms. They weren't trying to be demeaning towards airguns, but clearly felt there was a significant difference between the two. They're right – and that difference is power, just not in quite the same way they were meaning.

What's the real difference between an airgun and a powder-burner? It's not so much the raw power, which is what the person who made the "real" guns remark was referring to. It's the way that this power is stored and delivered.

Let's take a quick look at a centrefire rifle. This uses a cartridge, made up of a case, a bullet, a measure of powder and a primer. When the trigger is activated, the firing pin strikes the primer, causing a small detonation at the rear of the case which in turn creates a massive detonation of the powder, building up pressure and sending the bullet on its way. The power supply for that bullet is therefore contained within the cartridge itself, without which a centrefire rifle is just an inert lump of metal. It's a similar idea for rimfire rifles, too.

In the case of an airgun, the power supply is contained within the gun itself, and that power is present with or without a pellet being anywhere near the breech, making an unloaded airgun potentially more dangerous than an unloaded powder-burner. It goes without saying that both types of gun need to be treated with the utmost respect. Both are very much real guns.

Airguns get their power from a variety of sources. CO2-powered guns date back to the 1870s, and nowadays usually operate with the use of 12g or 88g aluminium capsules filled with compressed carbon dioxide. CO2 definitely has an important part to play in powering many of the airguns we use today, but is subject to variations in temperature and worthy of a more in-depth look another time.

Spring-powered airguns – whether break-barrel, sidelever or underlever – work by compressing a spring during the cocking phase. When the trigger is activated the spring is released, pushing a piston forward and creating a sudden compression of air, driving the pellet out of the barrel.

Gas rams – also known as gas springs or gas struts – operate similarly to coil springs, containing a chamber built into the piston full of pressurised air or nitrogen. When the gun is cocked, the gas is pressurised still further; then when the trigger is activated the gas is allowed to expand and the piston is forced forwards. As long as the rifle works well, both springers and gas rams offer good consistency of power from shot to shot.

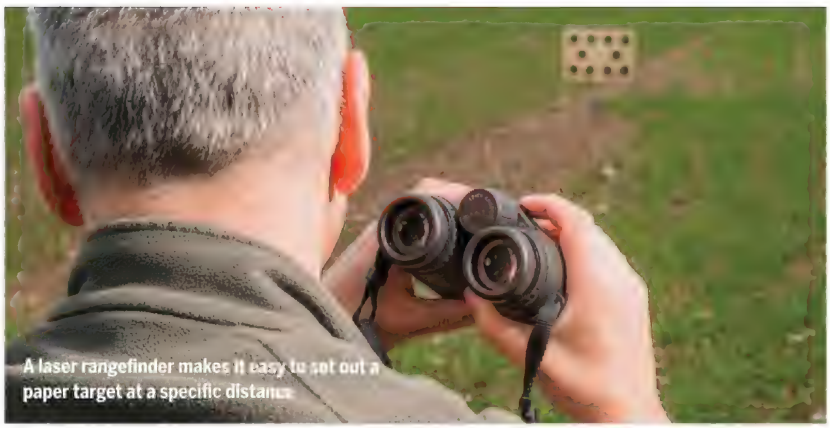
While all the powerplants described above are examples of pneumatic technology, using air or other gases under pressure, we now come to the pre-charged pneumatic, or PCP. This type of rifle is often associated with new technology, but is in fact the very oldest type of airgun tech, with a bellows airgun

in a museum in Sweden dating back to around 1580.

Self-contained pneumatic rifles may offer an onboard charging facility for each shot, requiring one or more strokes of a built-in handle or lever, but the PCP is different because it contains a high-pressure reservoir which is filled with compressed air from an external source, such as a pump or scuba tank. This reservoir allows multiple shots to be taken from one full charge of air before the pressure has depleted too much for any further shots to be taken accurately.

It's this stock of high-pressure air that is both the PCP's main attribute and its biggest drawback. With the reservoir filled, the rifle is all ready to deliver multiple shots with no discernible recoil, unless you are shooting at power levels of around 80 ft lb or more. PCPs are not hold-sensitive, so they can be shot from a variety or stances and off bipods, bags or even hard surfaces with no, or very little, change in point of impact. But they have a power curve.

In a perfect world, the pressure released for the first shot of the available string would be exactly the same as the last, but the world is imperfect and there will be some fluctuation within that string. PCPs may be regulated, unregulated or electronic, with an unregulated PCP showing the greatest fluctuation around the average power output per shot. As Simon Everett points out in this handbook's Airgun Answers section (starting on page 130), you need to find the maximum and minimum fill pressures that deliver the minimum variation between shots. This is often called the 'sweet spot', but Simon refers to it as the 'sweet sector' or 'sweet zone' because it's a range of pressure, not a single point, that will deliver the most consistent, and therefore the most accurate, shots.


A laser rangefinder makes it easy to set out a paper target at a specific distance

"THE 'SWEET SECTOR' WILL DELIVER THE MOST CONSISTENT, AND MOST ACCURATE, SHOTS"

Regardless of the type of PCP you shoot, you therefore need to work out a number of things: the maximum pressure you should fill to, the minimum pressure you should shoot to and the number of good, consistent shots you will get per fill of air.

This information is not only useful when determining your rifle's accuracy, it has a more immediate and practical use as well. I remember when one of my shooting buddies failed to work out how many shots he'd get from one fill of air, but carried on shooting regardless, going well below the minimum level. Even though he was aware that something wasn't quite right he continued firing – ultimately to find no fewer than nine pellets stacked up inside his barrel because the pressure had been too low to propel them out! My, how we all laughed!

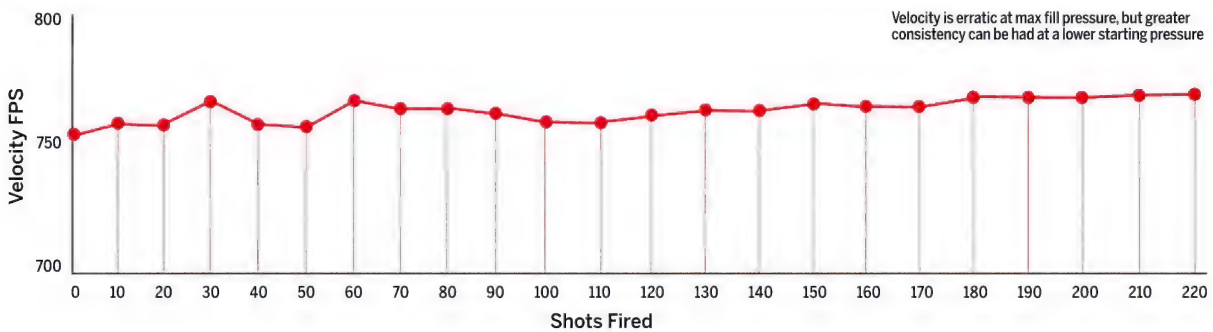
JARGON BUSTER

SPRINGER: A type of airgun using a coiled spring and piston to create the compressed air that drives the pellet. Springers, while generally being harder to shoot due to hold sensitivity and recoil, do not have a power curve – a big plus point compared with the PCP.

CHRONOSCOPE: A device that measures the velocity of a shot, which will change depending on how far the chronoscope is placed from the muzzle. While it's most often used to measure muzzle velocity, a chrono can be placed downrange to measure the drop in pellet speed and, if the pellet weight is known, retained energy.

REGULATOR: A mechanical device that controls the air pressure and volume of air that is made available to the firing valve of a precharged pneumatic airgun.

SAXON CHRONO DATA



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So how do you go about finding the sweet sector? It all depends on whether or not you have access to a chronoscope. Depending on the size of your PCP's air reservoir and air efficiency, you'll also need access to plenty of pellets. If you do have use of a chronoscope, such as a Skan or Shooting Chrony, then the best way to do this is to fill your rifle to the recommended working pressure, shoot, measure each pellet's velocity, record it and look for the variation.

For example, I filled my Daystate Saxon – an unregulated rifle – to 210 bar and fired 220 shots. Velocity was a little inconsistent from the full 210 bar, but settled down nicely after the first 60 shots, after which the rifle delivered no fewer than 160 totally consistent shots before velocity started to look a little inconsistent again. I now know I can get up to 160 solid shots from a single charge of air. More chrono experimentation would find the optimum fill pressure, but for now I'm maxing out at 180 bar.

If you don't have a chrono then don't worry. There's a method that is perhaps even better in delivering real-world data – it just means you won't be able to record any velocity figures. And what is that method? Shoot paper targets. A lot. Pick your chosen zero range and set out your choice of target. Shoot a series of five-shot groups and see whether there is any variation in point of impact at the start of the string, and when POI shifts beyond your acceptable variation towards the end. This method is more mentally demanding than using a chronoscope, because even off a bipod or other rested position you are relying on POI and group size to give you the data you're looking for. That means you need to concentrate to ensure any change in POI is down to a change in velocity rather than user error.

I used my old Daystate MK3 RT, which is regulated, but I cut the distance to just 25 yards to account for the wind speed. After rezeroing I proceeded to plug away at a series of 10-bull targets, shooting five-shot groups. After 150 consistent shots POI shifted for the next five, and shots 160 to 165 started to open up, indicating that I'd taken more shots than the rifle was actually capable of delivering consistently. But I now know I have 150 solid shots from a full charge. Job done! ●


Zero your rifle for the conditions before starting to shoot your test string

"IF YOU DON'T HAVE A CHRONO TO DELIVER REAL-WORLD DATA JUST SHOOT PAPER TARGETS. A LOT"


Keep the muzzle in exactly the same spot for each chrono shot


The rifle must be supported and you must be comfortable to achieve consistent shooting

TOP TIPS TO: WORK OUT SHOT COUNT

1



Shoot five-shot groups at a series of targets in as near-perfect conditions as you can get. These shots at 25 yards in light wind show a uniform point of impact.

2



The rifle was still punching a nice one-hole group from shot 150 to 155. It's mentally draining to shoot accurately for an extended length of time, but necessary.

3



Shots 155 to 160 have printed an even better group, but the point of impact is just starting to come off the bull. This is a warning sign that we've hit the limit.

4

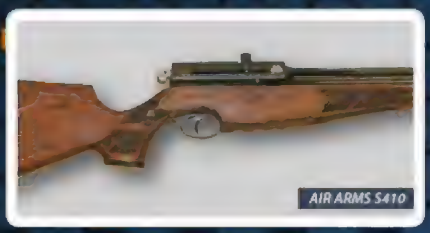


The group really started to open up after 160 shots, with shot 165 outside the group. Head back to the last reliable group to determine the maximum shot count.

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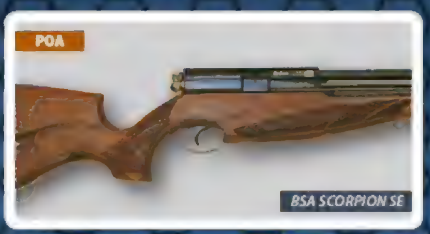

AIR ARMS HFT 500

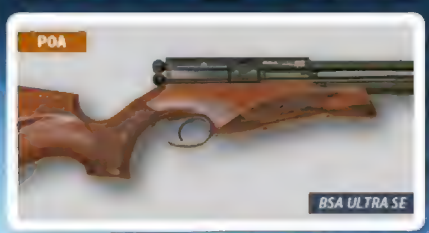

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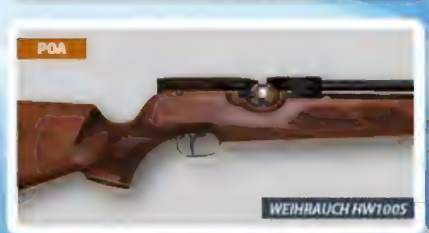

POA
GAMO COYOTE

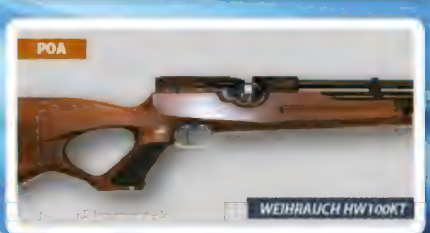

POA
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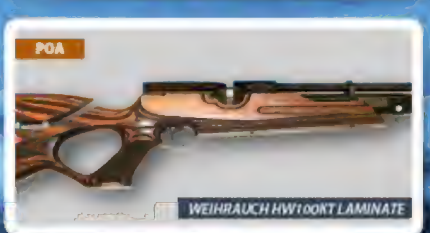

POA
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www.shootingshow.co.uk

The British Shooting Show celebrates its 10th birthday in 2018. Every visitor – seasoned or new, young or old – will receive a warm welcome from all the show staff before being exposed to a sensory overload of the very best that the global shooting industry has to offer.

'Airgun City' has always been an extremely popular area of the show. Over the past decade, the huge range of available airguns and every conceivable accessory has continued to grow; and with airgun shooting established as one of the most popular types of shooting in the country, The British Shooting Show is the only event of the year in the UK where all the major manufacturers, distributors and retailers from the world of airguns will gather under the enormous roof of the National Exhibition Centre (NEC), Birmingham.

Manufacturers like Daystate, Brocock, FX, Crosman, Air Arms, Weihrauch, BSA Daisy, Diana, Hatsan, Gamo, Webley, Umarex, Walther, Stoeger, SIG Sauer and ASG are all in attendance, along with many more.

Alongside the vast range of guns, there are also the accessories that accompany every aspect of airgun shooting; pellets; targets; rangefinders; bipods; hunting and range seats; bags; optics including scopes, tactical sights and state-of-the-art night vision; and thermal equipment for the serious vermin controller.

A NEW GENERATION

Many of us were introduced to the world shooting sports via airguns, and will have fond memories of plinking at tin cans and paper targets as youngsters. For me it was 1981 and a Webley Victor .22 with a 4x32 scope – a little gun that in today's terms could be described as primitive, aesthetically speaking, but that still shoots great. It is now back in full employment as my nephew discovers how much fun shooting airguns can be.

For young shooters and experienced alike, The British Shooting Show is the perfect place to get hands-on with the latest, modern spring, gas-ram, pneumatic (PCP) and CO2-powered airguns. There are 34 manufacturer have-a-go airgun lanes, as well as the Air Arms Experience, where visitors can have a try at speed shooting; UK Hunter Field Target (UKHFT), where competitors shoot at metal targets in the shape of airgun quarry; and UK Benchrest, where extreme accuracy is the name of the game. There is a small entry fee for the AA Experience, but please note that this is all about the experience, and you will be able to speak to instructors from British Shooting – home of our Olympic athletes. If you don't wish to wait, as long as you keep your entry card with you, you can re-enter at anytime over the weekend.

On top of all that, children 15 years and under can attend the British Shooting Show for FREE when accompanied by an adult.

MORE TO CHOOSE FROM

If you're looking to buy your first airgun, you may already know what you want, or you might not be sold on any particular gun because, for instance, you're not sure which propulsion method you should go for.

You've probably read the magazines and watched numerous YouTube videos, but there is no substitute to talking with the passionate and knowledgeable people who actually build the guns or who distribute to gun shops across the length and breadth of the UK. Once you have all the expert information you need and you're sure of which gun you want, you can be pointed in the direction of a retail stand close by to make your purchase. This is how the British Shooting Show brings the industry together.

Lee Hurst















ZERO LIKE A HERO

Zeroing a rifle is a vital step on the road to accurate shooting – but, as Mike Morton explains, so is knowing where to aim at a host of different distances

You've got yourself a new rifle, you've attached a scope and you're ready to shoot – but first you need to zero. Zeroing, which is sometimes referred to as sighting in, means aligning the sights on your rifle with the point where the pellet strikes at a certain distance. Unless you have the ability to adjust the power on your gun – and that's something we won't go into here – a rifle cannot be manipulated to alter the path of the pellet: it's the sighting system that you must adjust to ensure that the point of aim and the point of impact coincide at your chosen distance.

While we'll be focusing here on a rifle fitted with a telescopic sight, rifles with open sights need to be zeroed too, and the principles we'll be discussing are broadly the same.

But for now, let's assume you have a new rifle and scope combo. You've fitted the scope correctly, achieving perfect head position and eye relief. While it looks like you're ready to rock, there are a few things you still need to consider before you get going...



A BoreSnake needs to be fed into the barrel through the breech. Because of its long brass guide, it can only be used on a break-barrel air rifle



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RIFLING: The spiral lands and grooves in the bore that stabilise the pellet by spinning it either clockwise or anti-clockwise as it travels down the barrel.

LANDS: The part of the bore that remains following the rifling process. Because the grooves are cut into the metal of the bore, the resulting lands appear to be raised.

LEADING A BARREL: When a pellet is fired, it will deposit some lead in the fissures in the lands and grooves, offering a smooth, even surface for subsequent shots.

Whether your rifle is brand new or second-hand, it's always a good idea to clean the barrel. VFG felt cleaning pellets are suitable for light cleaning and maintenance, but you'll need something more robust to carry out a deep clean on a new or unknown barrel. Who knows how much manufacturing grease has been packed into the lands and grooves? If it's a second-hand gun, do you know how many pellets have been through that barrel since it was last cleaned? A pull-through is great for any type of air rifle, while a BoreSnake is even better if you're zeroing a break-barrel.

"YOU ARE FAR BETTER OFF SETTING UP AN INITIAL ZERO AT CLOSE RANGE"

INITIAL PELLET SELECTION

Now that you have a clean barrel, you have to make a choice: which pellet is likely to work best in your barrel? Of course the only way to determine this is to shoot groups and pick the pellet that delivers the smallest group size; but that can't be done until the rifle has been zeroed. JSB Exact, Air Arms Diabolo Field and H&N Field Target Trophy are all good pellets to use as a baseline.

Having settled on one, fire 20 shots into a safe backstop. This will lead the barrel: a barrel does need some lead in the rifling to achieve optimum accuracy.

SHORT FIRST, LONGER LATER

Now, let's get shooting! While it's tempting to set up your target at your chosen zeroing distance, you are far better off setting up an initial zero at close range, where your pellets are more likely to strike your chosen target and you can adjust accordingly. My chosen range for setting this initial zero is 10 yards – ensuring, as always, that there's a safe backstop behind the target.

Take your first shot. If you see the strike, great. If you don't, shoot again. If you still can't see where the pellets are hitting, pull the target in a little closer until you can.

You now need to set a rough zero at the 10-yard mark – or your shorter distance if you had to pull in your target. Most scopes will have windage and elevation adjustments in one-quarter increments. This means one click of the turret will move the point of impact a quarter of an inch at 100 yards. If your shot was 1in low at 100 yards, you would therefore need to bring the point of impact up by 1in – meaning



INCHES, MINUTES OR MILS?

In long-range centrefire shooting, turrets with MOA adjustment are arguably more useful, but for the airgun shooter there's little to choose between the available options.

four clicks at 100 yards. But as we have been setting our initial zero at just 10 yards, that would mean raising the point of impact by 40 clicks!

CLICKETY CLICK

Some scope turrets will measure adjustment in minutes of angle (MOA), which is very slightly different to the standard 1/4in at 100-yard increments we've been talking about. One MOA at 100 yards equals 1.047 inches, so for a rifle scope with 1/4 MOA adjustments, each click equals 0.261in at 100 yards – near enough the same for our purposes. Other turrets offer an adjustment in milliradians – more on that unit of measurement later.

If you can't really be bothered with the maths, and seeing how pellets are relatively cheap, you could just simply adjust your scope turrets on the fly – guesstimating the adjustment needed, shooting, and readjusting until you have your 10-yard zero. In some ways this is easier, but it takes longer and means you'll shoot more pellets than necessary.

Once you have your sights set at your initial zero, it's time to make a decision: at what distance should you set your primary zero? This will depend on the type of shooting you do. If you intend to shoot



Each click of the turret on this MTC Viper Connect will shift the point of impact by 1/4 inch at 100 yards



In contrast, every click on this Hawke Sidewinder will shift POI by 1/4 minute of angle at 100 yards

HOW TO: CHOOSE YOUR TARGET

You need to pick something that offers a clear target to aim at and shows a clear point of impact. Your choice of target doesn't need to be too elaborate, but it does need to be something that can be set up at different distances.



Something as simple as a cardboard box is great for zeroing, as long as it can be held in place at a set distance and won't blow away if you're shooting outdoors. Lay the box on its side and pop a brick or gym weight inside to make it stay put. Black dots applied with a marker pen or commercial stick-on targets are ideal.



A commercial target like this Birchwood Casey Shoot-N-C (www.birchwoodcasey.com) stuck to a cardboard or polystyrene box makes it easy to see pellet strikes.



A traditional funnel-type pellet catcher used in conjunction with commercial target cards is great for zeroing and pellet testing. These orange markers are 1in Target Spots.



If you're shooting outdoors, a target-holder that can be driven into the ground is perfect for securing target cards, and can easily be repositioned at different distances.

Light Sporting Rifle at your indoor target club, your zero should be 20 or 25 yards. If almost all your hunting will involve shooting rabbits from a particular point on a pony paddock 40 yards away, it makes sense to have a 40-yard zero.

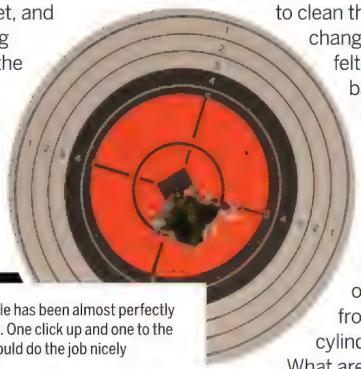
For most shooters, however, 30 yards offers a happy medium. Feel free to use the metric system if you feel more comfortable with that, but remember that many target sports use the Imperial system to set out distances to the target.

TAKE FIVE

With your target now set back at your chosen zero distance – 30 yards in this case – shoot a group of five pellets, take the average point of impact and adjust your zero accordingly. Keep doing this until the average point of impact of the group is in or around the bull. Again, it's tempting to adjust for every single shot, but a five-shot group will give a more meaningful average with an untested pellet.

Congratulations! You've now set zero at your chosen zeroing distance – but only with one type of pellet. What you really want to do next is to see how the rifle shoots at different distances. This will vary from pellet to pellet, and there's no point in doing this until you've found the perfect ammo for your rifle. You may have struck gold first time out, and your rifle is now printing consistent one-hole groups in the bull at your chosen zero range. If not, it's time to test some different types of pellet, preferably on an indoor range or outdoors in no-wind conditions.

"SHOOT FIVE PELLETS, TAKE THE AVERAGE POINT OF IMPACT AND ADJUST YOUR ZERO ACCORDINGLY"



This rifle has been almost perfectly zeroed. One click up and one to the left should do the job nicely

Pellets are not made of pure lead, and different pellets are made of different lead alloys. This means a barrel already leaded for Pellet X may not deliver the best results for Pellet Y. To give each of your test pellets their best chance to perform, you'll need to clean the barrel every time you change brands by shooting a few felt pellets, then re-leading the barrel by taking 20 or so shots with the new pellet before carrying out your next round of testing. If you're zeroing a springer, you'll need to load a lead pellet directly behind the felt one to provide a cushion of air and prevent the piston from slamming into the cylinder, damaging the rifle.

What are you looking for? HFT target kill zones vary from 15 and 45mm, with the smaller kill zones set out between 13 and 25 yards. In the hunting field, a kill zone the size of a 10p piece – 24.5mm, or just under an inch – is reckoned to be a good yardstick. For my own shooting, I like to see a five-shot group fit underneath an 18mm-wide 5p piece at my 30-yard zero, with sub-10 pence piece groups at all other distances. Again, this will vary depending on your type of shooting. Once you've found a pellet that performs well at your chosen zero distance, stick to it!

Now you've found the perfect pellet for your barrel, you have to decide what distances you'll be shooting over, and which



PROTECT YOUR EARS

Treat felt pellets with respect, just like any other type of ammo. They are extremely loud, so wear hearing protection when using them, but they're ideal for barrel maintenance.

HOW TO: GET STABLE



1

Stability while zeroing is critical. If you're shooting a PCP with sling swivel studs or a Picatinny rail, you can use a bipod to give yourself a stable shooting platform.



2

If your PCP doesn't have studs, you can use shooting bags to keep your rig rock solid. These bags are from US firm Dog-Gone-Good (www.dog-gone-good.com).



3

If you're zeroing a springer or a gas ram, you won't be able to use a bipod because of the recoil. Bags are the answer, but remember to rest the forend on your leading hand.



PELLET TESTING

Which pellet will work in your barrel? Only you can find out, and that means testing different types of pellets from different brands and comparing the results – it all takes time.

size groups – and therefore accuracy – are acceptable to you at these ranges. HFT targets are set out from eight to 45 yards, so let's use these as an example.

For most people, the term point-blank range (PBR) means 'close'; but for shooters, PBR is the range over which you can aim dead-on and still hit a target of your chosen size without having to adjust. To work out PBR, move the target in five-yard increments and shoot five-shot groups. In my case I was using a 1in Birchwood Casey Target Spot target, which is slightly larger than a 10p piece. Between 20 yards and 35 yards, I was still hitting my kill zone while aiming at the bull. This means my rifle, scope and pellet combo has a PBR of 20-35 yards, and that means pretty much anything I shoot at will be hit – providing my marksmanship is up to scratch – just by aiming on.

Things get more complicated outside your PBR. Depending on the range you are zeroed at and the distance between the centreline of your scope and the bore of the barrel, you will have to aim either higher or lower to place your shots inside the kill zone. The best way to find out where to aim is to shoot the rifle at these distances – in my case, out to 40 then 45 yards, and down to 10, then eight, aiming



A large target put up at close range is perfect for spotting your hits and enabling you to set a rough initial zero

at the bull and seeing where the shots fall. You will then need to adjust for fall of shot to bring the point of impact back in the kill zone. One way to do this is to measure how far outside the kill zone the shots are falling, then adjust accordingly. To do this accurately in the field, you'll need to know at what range you're shooting and the size of the target. A better method is to use the increments marked on the vertical crosshair on the reticle of your scope.

Many modern airgun scopes use a reticle based on the milliradian system. Increments will be marked on the reticle in mils, which are commonly referred to as mil-dots. A mil is a measurement of angle, and can be used by the military for rangefinding targets, typically man-sized targets. While the system has become popular for airgun shooting, the real appeal

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SECOND FOCAL PLANE: This type of scope makes the image of the target grow and shrink with changes in magnification. The reticle stays the same size, meaning the relationship between the target and the secondary points of aim will alter with changes in magnification.



FIRST FOCAL PLANE: With this type of scope, the reticle will grow and shrink along with the image of the target, meaning the relationship between the target and the secondary points of aim is consistent, whatever the magnification.



OVER OR UNDER?

Analyse your results to see where to aim either side of your point-blank range. In this case, varying degrees of holdover are needed from 8 to 15 yards, and from 40 to 45.

HOW TO: DETERMINE RANGE

A laser rangefinder is a simple and quick way to work out the range to target. Just be aware that some devices, typically those designed for deerstalking, won't range down to closer airgun distances.



A tape measure is a long-winded, but accurate way of setting out your targets – especially if you have someone to hold the other end for you.



If you know the length of your stride, then you can easily pace out the distance – just be wary of any uneven ground that may affect your measurements.

Another option is to shoot at an indoor target club, where the precise distances will already be set out for you – although sometimes the pre-determined shooting points available won't match your chosen zero distance.

"IF YOU SWITCH TO A DIFFERENT TYPE OF PELLET, YOU'LL NEED TO CARRY OUT THE PROCESS AGAIN"

of the milliradian system is simply that it provides some convenient points of aim in addition to the central crosshair. Reticles can be marked with other types of point of aim on the vertical crosshair, and these can be just as useful as mils.

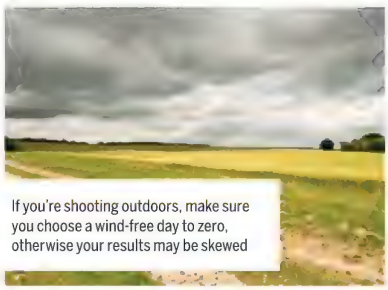
Let's suppose your shots are falling low at 40 yards. How low? With the crosshairs centred on the bull, see where the shots are falling on the vertical crosshair. Let's assume the shots are falling exactly one mil-dot low. The answer here is to therefore aim one mil-dot high.

Shoot a selection of targets at all distances outside your point-blank range and work out where you need to holdover or under to hit the target centre. You should write these down and make a chart showing you where to aim at any chosen distance.

WHICH FOCAL PLANE?

This system is great, but with one major drawback. Most telescopic sights are of the second focal plane variety, and the holdover and holdunder you've just calculated will only work accurately at the magnification you chose to carry out your range tests. A one mil-dot holdover at 10x magnification becomes a two mil-dot holdover at 20x and a half mil-dot at 5x. The decision you need to make here is whether you calculate a series of holdover and holdunder points for a variety of magnifications, or whether you stick to one magnification level when shooting. If you have a first focal plane scope, you can use whatever magnification you wish: your holdover and holdunder points remain the same.

If you only ever intend to shoot your rifle at one specific distance, all you need do is zero your rig and you're done; but when you're shooting over other distances, knowing your alternative points of aim is crucial to your success. Don't forget that if you ever decide to switch to a different type of pellet, you'll need to carry out the whole process again. It's also worth repeating this process from time to time to ensure your points of aim are still good. ●



If you're shooting outdoors, make sure you choose a wind-free day to zero, otherwise your results may be skewed

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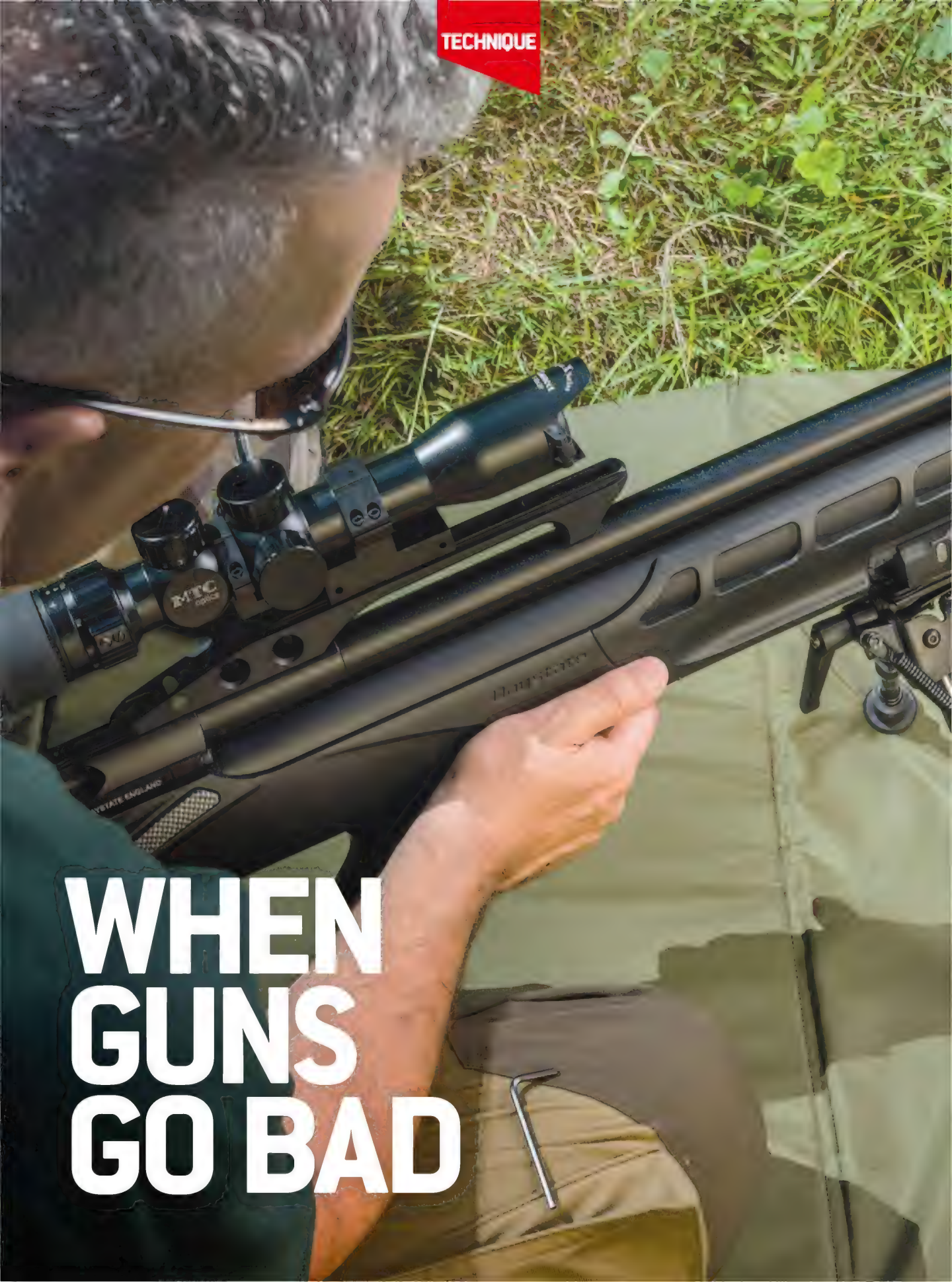
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WHEN GUNS GO BAD



Perhaps your new rifle's not as accurate as you'd expected, or maybe your trusty tack-driver's failing to deliver. Mike Morton runs through a few pointers to help get you back on target

Accurate shooting can put food on the table, medals on the mantelpiece or just a massive grin on your face. It's great when everything comes together – but it can be immensely frustrating when it doesn't. The excitement of shooting a new gun can quickly diminish if you don't achieve the results you expect. And in some ways it's even more frustrating when a rifle you know is capable of truly accurate shooting starts to behave like a blunderbuss. Luckily things usually go wrong for a reason, and can therefore usually be put right again. It's a question of examining the hardware (the rifle, scope, mounts and ammo) and the software (us), then diagnosing the problem and agreeing the right course of action.

What's the first ingredient of accurate shooting? Honesty. That means being honest about your ability and expectations. A cheap plinking rifle, even in the most skilled hands, won't be much use for competition shooting. Similarly, a high-end Field Target rig may well turn in some truly awful results until the shooter has learned how to use it. Being honest about what you and your rifle are capable of will help you focus on what you're trying to achieve. Expecting a rifle to consistently deliver five-shot groups measuring one pellet's width at 60 yards is a bit like chasing rainbows.

HAVE YOU GOT A SCREW LOOSE?

Let's start the problem-solving process by looking at screws. A loose stock screw can really throw the relationship between point of aim and point of impact for some rifles, while for others it can make surprisingly little difference. Nevertheless, stock screws are a good place to start looking for trouble. Springers typically have two screws at the forend as well as the belly of the stock or the

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CANT: To slope, tilt or angle the vertical crosshair from the vertical plane. A rifle held upright may still exhibit cant if the scope has not been mounted vertically. Similarly, the shooter can induce cant on a correctly mounted scope by angling the whole rifle away from the vertical.

TORQUE: The rotational force needed to tighten or loosen screws. Too little torque means the components being tightened may come loose, while too much can cause damage, particularly to scope bodies and their sensitive internal parts.

THREADLOCK: A compound applied to the threads of a screw to prevent loosening and corrosion. Use the semi-permanent blue type, not the permanent type.

POINT OF AIM: The precise area on a target, whether paper, metal or living quarry, at which a rifle is pointed using either a telescopic or open sight.

POINT OF IMPACT: The place where the pellet hits. Point of aim and point of impact should coincide at the chosen distance at which the rifle has been zeroed.

trigger guard. PCPs may have one or two screws. If the action is loose in the stock, your head/eye alignment with the sight won't be consistent. Remember: consistency equals accuracy.

Scope mount screws can also come loose – sometimes even if you've used threadlock. An angled scope will induce cant, and that in turn means your pellet will not be intersecting your point of aim at anything other than your set zero distance. Before you start checking your mounts for any loose screws, make sure the scope is exactly where it should be, and that means perfectly level with your action. You're not mounting your scope again, just verifying it's still in exactly the right place. Check the screws clamping the mounts to the rail as well as the rings themselves.



Don't forget to check the screws at the forend if you're shooting a springer. At least one of the screws holding the trigger guard usually does double duty and holds the action in place as well

> **"I'VE KNOWN PLENTY OF SHOOTERS WHO HAVE NEVER CLEANED THEIR BARREL"**

KEEN TO CLEAN

I've known plenty of rimfire shooters as well as air rifle shooters over the years who have never cleaned their barrel. It wasn't because they were lazy, but because they genuinely believed their rifle was fine and the barrel didn't need cleaning. They were partially right. Any barrel firing a lead projectile needs to have a thin film of lead deposited on the lands and grooves. This process, known as leading, fills imperfections in the barrel and reduces friction.

While leading is beneficial, the layer will continue to build up as more shots are fired, and after a period of time this will start to impair accuracy. This is one of the main reasons why a rifle that had been shooting well may now be shooting wild. Its barrel needs cleaning and re-leading.

How often you clean will depend on the type of barrel, the type of pellet, the velocity and the existing level of leading. Air Arms, for example, suggests cleaning a barrel after every 250 shots. You should certainly clean your barrel whenever you suspect



Action screws may be used to hold the trigger guard in place



A torque wrench or driver isn't essential, but removes the need for any guesswork. This particular driver is made by Felo and can tighten screws over a range of 1.5 to 3.0 Newton metres



EASY DOES IT

It's tempting to use the long arm of an Allen key because it feels better in the hand and offers greater torque – but it's all too easy to apply too much torque to a delicate scope.



OLD OR NEW?

If your rifle's brand-new you may find it becomes easier to operate – and more accurate – the more it's used. You can speed up the process by firing into a safe backstop.

CHECK YOUR SCOPE MOUNTS

Ensure you have correct eye relief before tightening your mounts. Check the scope is level with your action to avoid cant. One trick is to align a bubble level on the scope's elevation turret cap with a second bubble level mounted on the action



It's hard to get perfect eye relief for every shooting stance. Either go for a happy medium in a number of stances, or set perfect eye relief for the shooting stance you'll be using most often.



Make sure the mounts are tight to the rail – use a torque wrench if you have one. If you choose to use threadlock, use the blue non-permanent type so you can reposition the scope if needs be.



Spirit levels are great for checking the scope and rifle are both level. An alternative is to use a plumb line, but it won't tell you whether your rifle is level in relation to your crosshairs.



If you're not using a torque driver to secure the upper rings, make sure you use the short end of your Allen key to avoid over-tightening the screw and potentially crushing the scope tube.

accuracy is degrading, all other factors remaining equal. Once cleaned, the barrel must be re-leaded, and this can take anywhere between five and 50 shots. I've found 20 to be the sweet spot – but, as they say, your mileage may vary.

PICK A PERFECT PELLET

It's sometimes easy to get upset with the level of performance a rifle is delivering and blame the gun, but another aspect of shooting which can have a huge effect on accuracy is pellet selection. There are no hard and fast rules other than to make sure you try several types to see which ones your barrel prefers. Sometimes you'll get it right first time, and sometimes it can take much longer. In some cases I've struck lucky with the very first pellet tested, whereas others have taken far longer – 11 different pellets being my longest search for perfection. The rifle in question wasn't bad – far from it. In fact it's a real tack-driver – provided it's fed the right pellet.

Pellet prep can help – and that means a combination of washing, lubing, head-sizing and weighing – but that's a process best employed for fine-tuning a pellet you already know works well in your rifle, rather than a means of finding the right one to start with. Once you have found a good pellet, check the batch number and buy as many tins from the same batch as you can. Pellets do vary from one batch to another.

Something else to consider, particularly with brand-new guns (or second-hand examples that look as if they've not seen much use), is to put a fair few shots through the gun before passing judgement. Some guns – usually springers, but sometimes PCPs as well – really need a period of use to allow everything to bed in. Some rifles with super-tight tolerances also benefit from a little wear. Depending on the rifle and what

SYSTEM SHOCKED?

If your rifle isn't delivering the performance you think it should, it's usually for a good reason. A systematic check will eventually find and fix the problem in most cases.

BARREL CLEANING

It really is necessary to clean a barrel, even a brand-new one, where the bore may have been coated in packing grease and picked up microscopic pieces of swarf



A pull-through, like the one here from Napier, is great for cleaning a barrel either at home, at the range or even in the field.



Once you have a clean barrel, it's necessary to fire a few shots to lead the barrel. Your rifle will probably not deliver very accurate results during this leading-in phase. It may seem a waste, but to speed things up you could just shoot directly into your backstop.



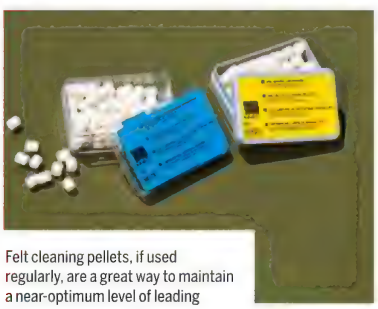
When changing pellets it's tempting to just crack on with the testing, but you're not really giving each pellet the chance to perform at its best unless you do at least a quick maintenance clean beforehand.

shooting, if any, it saw at the factory, this can range from 50 pellets to 500 or more. You should feel the rifle becoming slicker as you shoot it, as well as starting to see better results downrange.

EVERYTHING IN MODERATION

A moderator may very well affect the point of impact if it weighs down the end of the barrel, but it shouldn't affect accuracy. If you're using a moderator that isn't permanently bonded to the gun, check to see whether or not it needs tightening.

If the accuracy is still off – and you'll notice this straight away when fitting a new moderator – remove the silencer and inspect the inside of the exit hole for streaks of lead, the presence of which indicates at least some of the pellets are clipping. This means the threads on the barrel and moderator are not concentric to the bore of the moddy. If you have a lathe you may be able to re-cut the thread on the moderator, but the easiest fix is to either stop using it or try another one instead.



Felt cleaning pellets, if used regularly, are a great way to maintain a near-optimum level of leading



Patches with a little Napier Power Pellet Lube or Power Airgun Oil are perfect for cleaning and conditioning the bore. This is as true of a brand new rifle as it is a well-used airgun

VECTORING IN ON VELOCITY

Accuracy is born out of consistency, and consistent velocity is a hugely important factor. This is why people spend so much time, in the case of an unregulated pre-charged pneumatic, trying to find the sweet spot on the power curve.

It's not just PCPs that can suffer from inconsistent velocity. A springer with a broken main spring, or one that's been over-zealously greased, won't deliver consistent power.

The only true way to test consistency of velocity is by using a chronograph: either a barrel-mounted instrument, like a Combro cb-625, or a free-standing device, such as a Shooting Chrony F1 or Skan. Readings with a variation of 20 feet per second are no cause for alarm, and a variation of around 10fps or less is fantastic. If it's much over 20fps, however, don't immediately blame the gun. Try shooting sorted pellets or even another brand of pellet. If you try this and your readings are still wayward, your rifle may need a service or even some sort of repair. If you're using an electronic rifle, make sure the batteries are fully charged.

If your rifle's still not shooting sweetly by now, don't strip it down or put it in for a service just yet: there are a few more things to check first. Take a look at the breech seal on your rifle, if it uses one. Is it missing? Is it damaged? If so, then replace it. Some PCP pellet probes use an O-ring, so again if your rifle should have one, is it still there and is it in good condition?

Some multi-shot magazines also use an O-ring to hold the pellets in place before they are inserted into the breech. These can degrade over time, but the most significant potential problem with a magazine is whether or not it indexes properly. If this fails to happen, a pellet may be damaged as it enters the breech, meaning accuracy could suffer. You can check this by loading each pellet by hand into the breech. You can do this even if your rifle doesn't come with a single-shot tray: it's just a bit fiddly.

TRIGGER TIME

A good trigger won't make an inaccurate rifle suddenly come good, but it can help. A crisp one- or two-stage trigger, breaking at a sensible weight, will inspire confidence – and keep the gun on aim. If your trigger is excessively heavy, consider lightening it, but only if you know what you're doing. If not, take it to a competent gunsmith at your local shop or club.

"A GOOD TRIGGER WON'T MAKE AN INACCURATE RIFLE SUDDENLY COME GOOD, BUT IT CAN HELP"

Of course a good trigger is only useful if it's being controlled properly. Good trigger technique and follow-through are essential to good marksmanship. The antithesis of this is to snatch a shot, then pop your head up to see where the shot went.

Let's break this down. Pulling, or squeezing a trigger was once described to me as like drawing a line in the sand with your fingertip. Pretend your trigger finger is tracing a line from top to bottom and the trigger is somewhere in the middle of that imaginary line. Keep that trigger finger coming back and when it makes contact with the trigger blade continue to draw it backwards, smoothly and consistently.

Following through a shot means maintaining the aim position long after you think the pellet's left the barrel. If you pop your head up to inspect your handiwork you're letting yourself down on two counts: you're not giving your rifle the opportunity

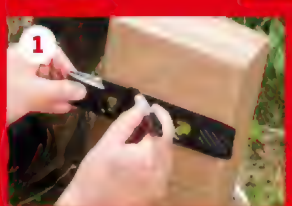


SHIFTING SCOPE? NO JOKE

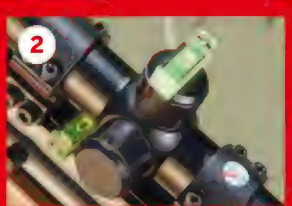
A lack of accuracy can be put down to something as simple as a scope that's shifting in its mounts. Regularly checking the screws will make this problem disappear.

HOW TO: KILL CANT

Even if the scope and gun have been properly lined up to be perpendicular to each other, cant is still a problem if the shooter doesn't hold the rifle level. Some people will naturally cant their gun, while others get tricked into canting the rifle if they're shooting over sloping ground



One way to check to see if you're holding the rifle correctly is to check the orientation of your crosshairs with a perfectly level reference point. Use a spirit level to draw a horizontal line.



A bubble level placed on the action or turret cap will soon let you know if you're canting your gun. It can be an unpleasant surprise to find you're not holding it as level as you thought.



Some rifles, like this Daystate Pulsar, have a bubble level built in to the dovetail scope rail to let you know at a glance whether you're holding your gun correctly or not.



Some manufacturers, such as Sportsmatch, supply bridge or swing-out levels that attach to the upper ring of your scope mount. It's easy to look at this type of level even when on aim.

to do its job, and you're not even properly checking your shot. It's far easier to spot your shot by staying on aim and looking through the scope.

IT COULD BE YOU

By now, you should be confident that your rifle is more than up to the task at hand. Which weak link needs isolating next? It may not be easy to admit it, but it could be you. If you're a regular shooter who knows what he or she is about, you are probably not to blame. But are you out of practice? Have you had a break from shooting and returned to it recently? Have you suffered some sort of injury? Are you maybe not quite as fit as you once were and your breathing isn't under proper control?

"IT'S FAR EASIER TO SPOT YOUR SHOT BY STAYING ON AIM AND LOOKING THROUGH THE SCOPE"

These are all things that are easy to discount and ignore, probably because we don't want to admit them even to ourselves. I had a bad knee injury a few years ago that seriously affected my shooting. After some intense physio (thank you NHS), I can now run, ride and shoot again, almost as well as I did before. You may like shooting from a certain stance, but if for some reason you are no longer able to do so, you may have to adapt your shooting style.

If nothing has changed and your rife still isn't performing as well as you expect, try shooting another rifle, assuming you have one to hand, and see whether or not that's shooting properly too. Maybe the outdoor range where you've been shooting isn't as wind-free as you thought, and the other rifle is faring no better. It may be a good idea to swap scopes if you have one available, just in case it's the scope rather than the rifle that's at fault.

Another option is to let a fellow shooter use your rifle, but they may need to adjust the scope to suit them better before they can truly test it. If they are doing no better than you, and you've exhausted all other possibilities, perhaps it's time to send the rifle back for a replacement or repair.

Hopefully any accuracy problem you found with your rig will have been caused by a specific issue. By working your way through our checklist, that problem should have been solved, and your rifle is good. ●

JARGON BUSTER

CHRONOGRAPH: An instrument to measure velocity by using two optical sensors that detect the passage of a pellet. The pellet is fired so it passes through or over both sensors, and the time it takes for the pellet to travel the distance between the screens is measured electronically.

POWER CURVE: A number of shots taken from a PCP and plotted against their velocity. A flatter curve is desirable as it means there is little variation from one shot to another.

SWEET SPOT: The portion of a power curve displaying the minimum variation in velocity between shots. For an unregulated PCP, this will usually be somewhere in the middle of the power curve.

SINGLE-SHOT TRAY: A device to effectively convert a multi-shot rifle into a single-shot rifle. This can be useful for training and competition purposes, but can also be useful to ensure pellets are properly presented to the breech by the pellet probe.

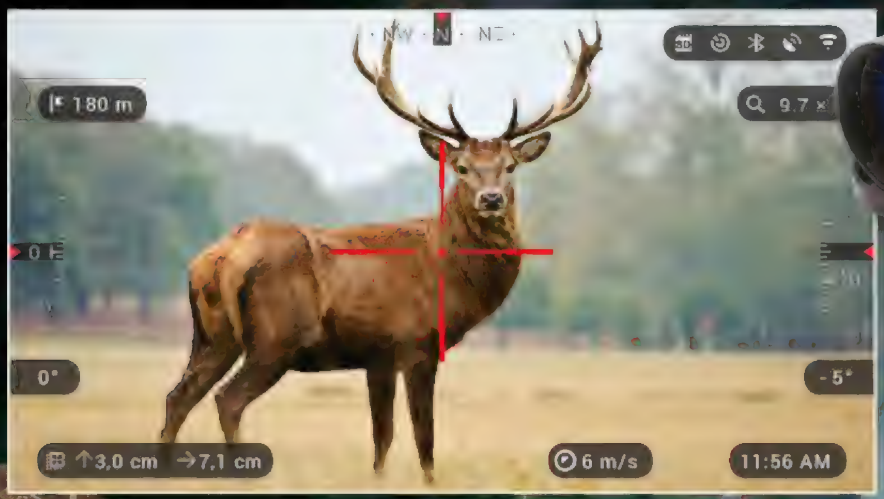


BE ABLE TO GET STABLE

Any form of accuracy testing should be carried out from as stable a platform as possible. A PCP fitted with sling swivel studs and shot off a bipod is ideal.

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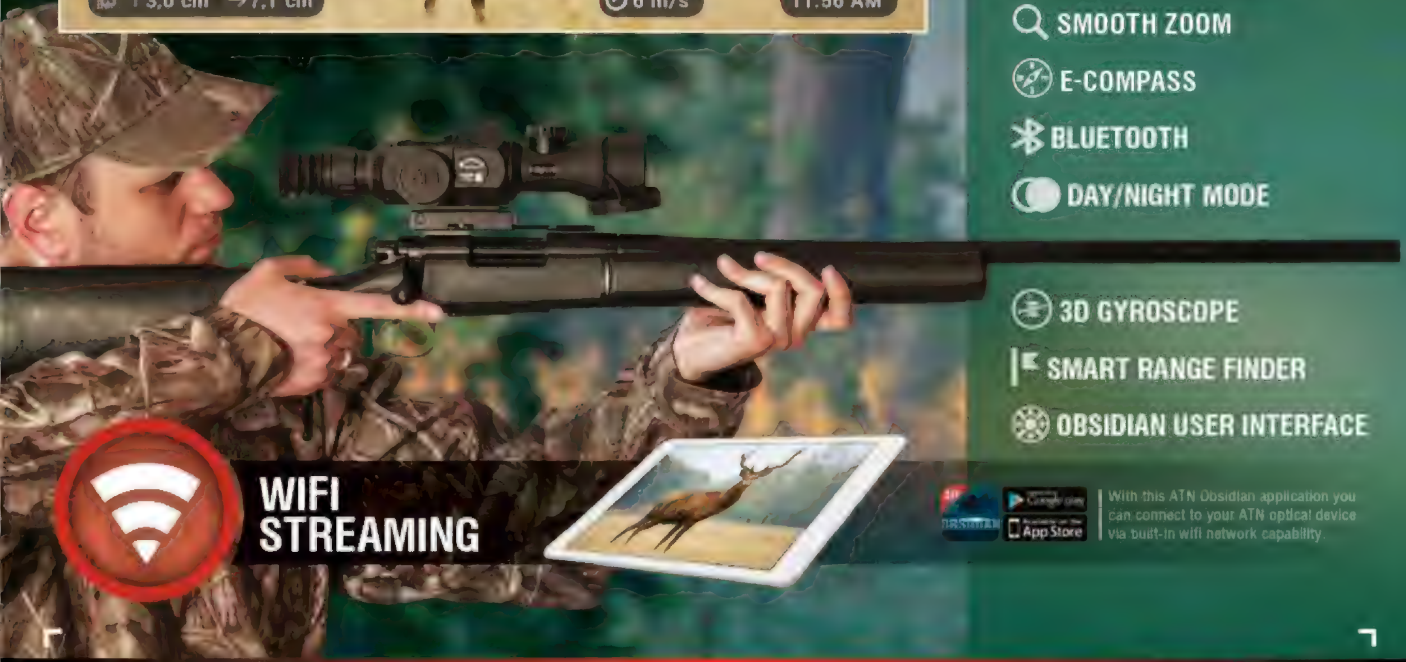
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TARGET SHOOTING

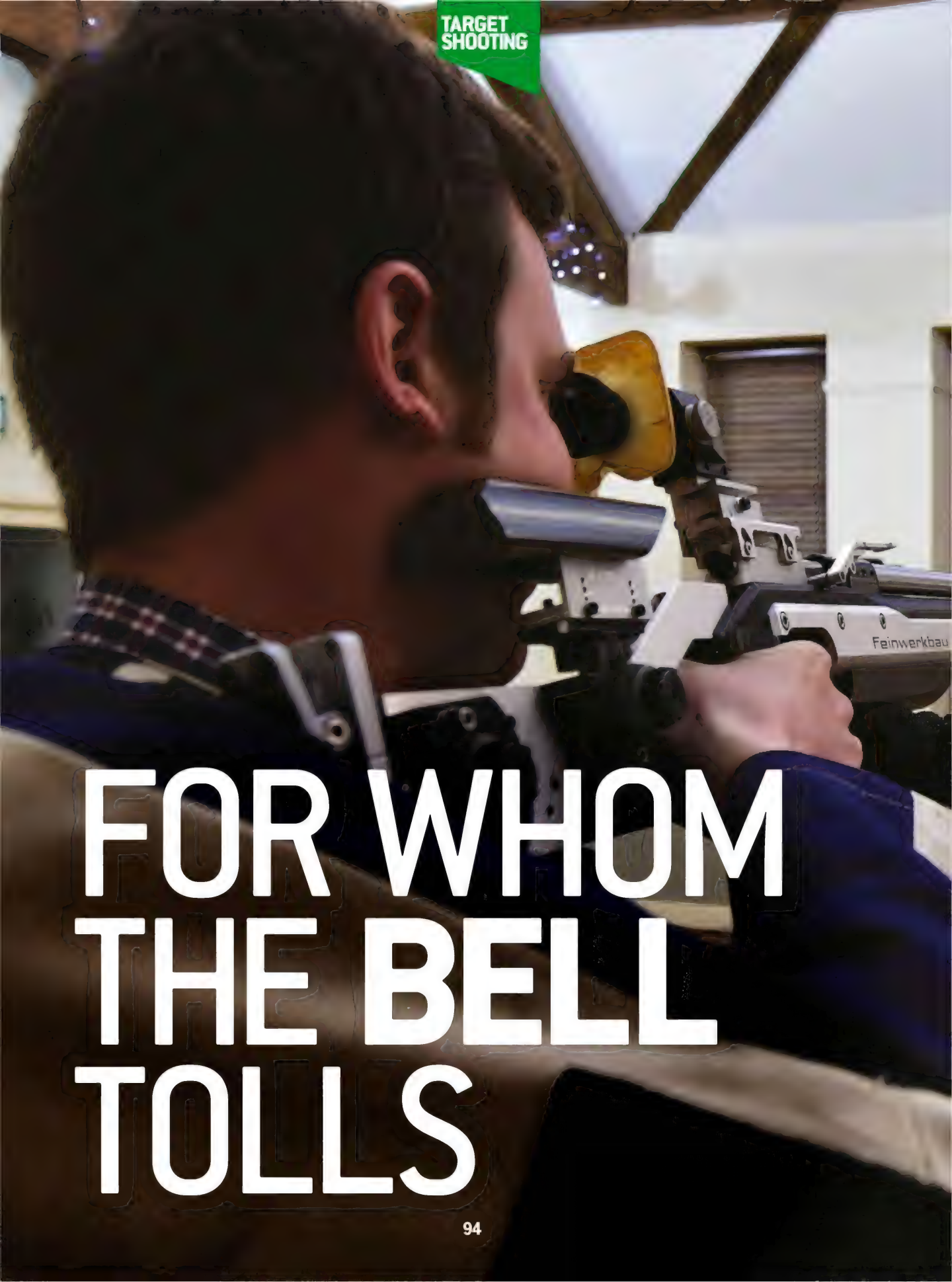
For whom the bell tolls 94
One of the world's oldest target sports involves shooting at an extremely short range – at an extremely small bullseye

Plinking perfection 98
Plinking is a great way to hone your marksmanship skills – or just have some good old-fashioned fun!

On Target 102
A special quickfire section for target shooters, offering practical tips and insightful views







FOR WHOM THE BELL TOLLS

One of the world's oldest target disciplines involves shooting at an extremely short range - but at an extremely small bullseye. Simon Everett offers an insight into this traditional sport which has enjoyed a revival of late



YOU CAN RING MY BELL

The target is scored after each detail. If the shooter gets a bull, the pellet will fly through the hole and ring the bell behind. Any pellet marks on the target are overpainted

It was Henry VIII in the 1500s who first introduced compulsory shooting practice, with the law requiring all men under the age of 40 to fine-tune their archery skills with longbows. The king's motive was to ensure England would have sufficient top-notch archers to mount an effective defence or to create a formidable army.

A similar policy was introduced by Queen Victoria following the Boer Wars, where the woeful standard of marksmanship within the British Army was exposed. She duly insisted that all able-bodied men learn to shoot well.

This directive proved to be the catalyst for organised bell target shooting. Prior to this royal decree, this discipline was merely an informal activity practised in the vicinity of Birmingham's gunmaking quarter. However, it was immediately recognised as a suitable form of target practice designed to instil proficient marksmanship and adopted on a wider scale.

In 1903 bell target shooting was embraced by the National Rifle and Pistol Association and became a recognised competition discipline; indeed it was this competitive element that helped create the high level of marksmanship so desired.

It was also around this time, perhaps as a result of the growing interest in the activity, that Lincoln Jeffries revealed his innovative air rifle design. The gun proved suitable not just for bell target shooting – it was the most competitive rifle available. The reason for its success owed much to Jeffries' use of a rifled barrel, the first air rifle maker to take this route. With his rivals still using

THE BASIC RULES

Different leagues have developed their own rules to suit their particular circumstances over the years, but the original match format from the Midlands is as follows:

- **A team consists of eight people, shooting at a distance of six yards, free-standing and using no rests or optical aids (spectacles aside).**
- **The home competitor shoots first, firing all their shots in one session without moving from the target; they are followed by an away team shooter, with this pattern continuing until the match is finished.**
- **Each shooter is allowed six scoring shots plus one optional practice shot (often called a sighter) at the start of their session.**
- **There is normally a half-time break after four shooters from each side have shot.**


Shooters stand behind the line as they take their shots

smooth-bored airguns, Jeffries' innovation gave him a distinct advantage.

After the Boer Wars the demand for military guns dropped overnight. One of these manufacturers, BSA, was seeking work for its factories and turned its tools and employees to making bicycles and motorcycles. Such had been the rapid rise of bell target shooting that BSA approached Jeffries to offer to build his air rifle under licence. A deal was struck and within 12 months BSA was churning out 10,000 air rifles a year. This dovetailed with the surge in interest of bell target shooting, and within two years of the activity falling under the auspices of the National Rifle and Pistol Association more than 4,000 bell target clubs had sprung up around the country, with 1,200 in Birmingham alone.

Most of these clubs were based in pubs, much like darts teams are today. The publican would supply a rifle and target for the use of members who would take alternate turns (working men couldn't afford to buy their own in those days). Pellets were dispensed from a vending machine, a payment of 1d (one penny) procuring eight pellets – sufficient for two sighters, with the other six required for the competition.

"THE HOLE CIRCUMFERENCE REPRESENTED THE SIZE OF A TYPICAL MAN'S HEAD"

The target itself consisted of a six-and-a-half-inch square steel plate housed in a box and set at a distance of six yards (18 feet). To ensure each shot could be seen the target plate was painted white. At the centre of the target was a three-eighths-inch hole which served as the bullseye, with scoring rings engraved around the bull at a space of one, two and three inches. Behind the hole sat a bell which rang with a clearly audible 'ding' each time it was struck. The hole circumference was significant as it represented the size of a typical man's head at 100 yards – hence why bell target shooting proved useful for training civilians in wartime marksmanship. Incidentally, some pub teams shot over seven yards, although this was because they set up their bell targets using the premises' skittle alley which happened to be seven yards long.

SCORING

- The target rings score 5, 4, 3, 2 and 0 (one-point scores are not included).
- The score is taken from whichever ring contains the greater part of the pellet mark. In the case of an exact split the higher score is called.
- Round-nosed pellets leave an impact spot in the centre making them easier to mark.
- The target is repainted after each shot.




Bell target shooting is a social activity for people of all ages – with the added element of competition



A traditional pellet dispenser similar to those used in pubs


Bell target is one of the rare occasions where guns and alcohol can mix


Bell target shooting promotes mental and personal discipline well into retirement

Age and gender are no barrier for bell target shooting and most clubs have qualified coaches enabling children below legal age to be properly supervised and coached in the correct techniques.

Indeed, these days competition is thriving and the current individual league champion is 17-year-old Tabitha Corbett of Montgomeryshire & District who proved amazingly consistent throughout the season. Bell target shooting offers a skill for life, with the mental and personal discipline required offering benefits well into retirement. Alan Baker is a prime example: still a force to be reckoned with in his mid-70s, while Ted Pearce and Richard Beaumont, aged 92 and 95, respectively, are still enthusiastically active at club level.

Many club shooters use supplied rifles illustrating how accessible a pastime, regardless of budget, bell target is. It's a great leveller, too. Many competitors take part with affordable rifles, such as the Air Arms S200, while others shoot spring-powered rifles and are capable of holding their own against their precharged rivals. The Feinwerkbau is the rifle of choice for the top participants; the 800 series features very highly, but the 300 from the 1970s is still an extremely competitive gun even when pitted against the single-stroke pneumatic 600 series.

Shooting jackets, gloves and boots make a big difference by helping with posture, but these items are by no means a prerequisite and plenty of airgunners shoot in normal clothes and training shoes.

Bell target shooting is a discipline anyone can succeed at with little kit – but once you try it, it can become very addictive. Plenty of clubs exist around the UK so there are many opportunities to give it a go. ●

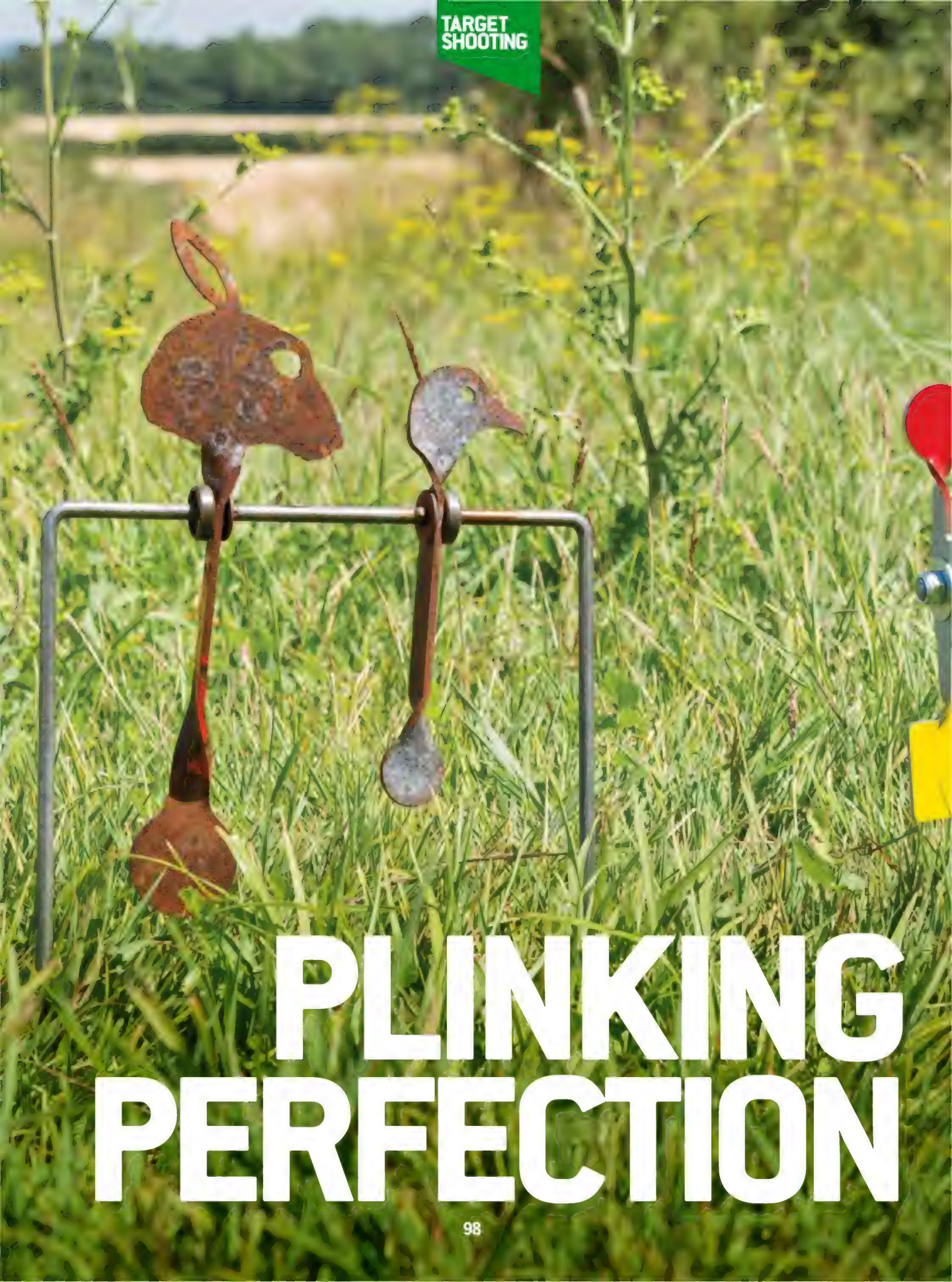
Find your local league by visiting www.belltarget.com


Tabitha Corbett is a rising star in the sport

RIFLES AND SIGHTS

- Depending on the league, rifle selection can be very much down to individual choice with everything from a 1903 Lincoln Jeffries, a springer, regular PCP or a modern match rifle such as a Feinwerkbau or Anschutz being used.
- All rifles must be of .177 calibre.
- The ideal power level is around 6 ft lb, the same standard power as match target rifles. This keeps pellet bounceback to a minimum – which is vital when shooting at a metal plate.
- Aperture sights are the main preference but not acceptable in all leagues. Open post sights can work equally as well.
- Scopes will not focus over such a short distance and are therefore useless.
- Some leagues allow the use of lenses with aperture sights. Magnification will exaggerate movement making it harder to shoot but may correct an eye problem.





PLINKING PERFECTION

Plinking is a great way to hone your marksmanship skills – or just have some good old-fashioned fun! Mike Morton runs through a few different types of target

Informal target shooting, better known as plinking, is a great way to put some shots downrange. Because there's none of the pressure you're under when targeting live quarry or taking a crucial shot in a competition, you're free to concentrate on your shooting. Plinking for fun is a fantastic stress-buster, but there are other benefits: it helps you keep your skills current, and is an invaluable way of getting yourself acquainted with a new rifle.

Paper targets are great for testing and precision work, but it's really rewarding to shoot reactive targets that give you immediate feedback when they've been hit. Let's take a look at what's out there...

The simple spinner is one of the cheapest and most popular types of plinking target. It's a source of great satisfaction when you hear the thwack of the pellet and see the target spin round its axis. Animal-themed spinners, with a variety of life-size airgun quarry head designs, are perfect for the hunter because you can learn to target your prey under controlled conditions. The painted surface will reveal each pellet strike, so you'll be able to tell if you really did hit the kill zone. The paint will eventually get shot off, but if you keep a spray can to hand, you can top up your target.

Animal-themed targets can be a big turn-off for some people, but there is a plethora of alternative designs, usually with circular or square shapes to aim at, such as the Double Spinner from Nockover Targets (www.nockover-targets.co.uk).

Be aware that a strike on a spinner doesn't always result in the pellet stopping dead in its tracks. Spent ammunition hitting a top spinner can ricochet upwards and backwards, so you need to be aware of your boundaries if you're shooting in your garden.

Most large spinners of this type work by having an opposing counterweight, and these make excellent targets too. They're often smaller than the main target, so offer more of a challenge; and in this case spent pellets are deflected downwards, which is safer. Most plinking targets are designed to be shot with legal-limit rifles, so if you want to shoot an FAC-rated airgun you'll need to locate a rimfire-rated target – not to mention somewhere safe and legal to shoot it.

A variation on the regular stick-in-the ground spinner is the screw-in spinner, such as the one from Jack Pyke (www.jackpyke.co.uk). The Mini Screw In Air Rifle Spinner Target is screwed into a wooden object such as a tree, gate or fence post. Just be careful about your backstop: by design the spinner will be positioned to one side of its wooden support, not in front of it, so don't rely on that big oak tree as a backstop.

Perhaps the best-known type of plinking target is the resettable style, such as the Flip-Up Crow Field Target from BSA (www.bsaguns.co.uk). A hit to the central kill zone will make the whole target fall over backwards, after which the target can be pulled back up again using the supplied reset cord. Some targets use metal reducers to shrink the size of the kill zone and make a successful strike more difficult.

The Hunter Practice Rabbit, another offering from Nockover, can be set on the ground and



Knockdown targets like this one from BSA offer a sure way to check if your shots are on target – a quick pull of the cord and you're ready for action again

RIGHT AND WRONG SCREW-IN SPINNERS



Safety first! This little spinner's great fun to shoot, but it's been poorly positioned in front of a door – and that's an accident waiting to happen...



Fire away! The small spinner is a good test of marksmanship, but most importantly there's now a safe backstop in the form of the private woodland on this permission.



Chalk discs are a cheap but challenging way of testing and honing your skills – and that puff of chalk dust is a great reward for a shot well taken



Firebird Targets are used in conjunction with a special screw-in target holder



EXPERT TIP

Firebird's blue targets are designed for reduced noise levels in more heavily populated areas – but be aware they still go off with quite a bang!

staked in place, although it's heavy enough to stay put under its own weight if it's placed on grass. A shot to the head sees the yellow disc topple, after which a shot to the reset disc in the chest will see it pop back up again without the need for a reset cord. This particular target is extremely well-made and the mechanism is reliable at all normal airgun ranges – just make sure to oil it from time to time.

If you've ever shot ducks at a fairground, then the gallery knockdown type of target will be familiar to you. When you shoot each animal it falls over when hit, then when they're all down you shoot a central reset target to flip them back up, meaning the fun can start all over again. Targets like this have the additional benefit of acting as a pellet catcher, reducing the risk of ricochet and collecting all that harmful lead, which can then be disposed of safely. In practice, I've noticed that .22 pellets seem to work best with this type of target. Although legal-limit guns produce similar levels of energy regardless of calibre, velocity is quite different, and a faster-flying .177 pellet won't always knock down the target.

"A PELLET HITTING THE PLATE CAUSES THE CAPS TO DETONATE IN AN EXPLOSIVE FLASH"

The Flip-Target (www.flip-target.com) offers a different experience. Its special polymer is designed to withstand around 2,000 shots, but could last even longer. Similar types of flip target are available from other manufacturers. When one of the discs is hit the whole target will flip away from the shooter, presenting the next target at a different angle and at a greater distance than the last, so each subsequent shot gets more challenging, bringing range estimation into play as well. It's easy to get carried away when shooting a target like this, so ensure you have a safe backstop for every shot. Fun must always come second to safety.

Chalk targets such as the Shoot-N-Smash from Bisley (www.bisley-uk.com) are traditionally associated with rapid-fire and breakable disc target competitions, but are steadily growing in popularity for plinking. The disc must be rested against a safe backstop or hung from a nail or twig, then when it's shot it explodes in a grin-inducing cloud of chalk dust. The regular white target disc has nowadays been supplemented by coloured discs as well as a variety of different shapes, including animals. Check out chalktargets.co.uk for some additional styles. Do remember that if you're pinning the target to a wooden board, make sure it's soft wood with a safe backstop behind, as pellets can ricochet straight back off hard wood surfaces.

If you're looking for more bang for your plinking buck, FireCap targets (www.firecaptargets.co.uk) offer explosive fun. The FireCap system uses the same type of ring caps that are used in toy guns. A hinged stainless steel target plate is placed over a ring cap once it's been seated on the target's firing pins. The target plate is then held in place by a powerful magnet. A pellet hitting the plate causes the caps to detonate in an explosive flash, a loud bang and a cloud of smoke. The FireCap is available on its own, which can be screwed to a suitable backstop, or on a spike that can be driven into the ground. The 8-ring caps it uses can be bought in toy shops or online and work out at just a few pence a pop, delivering great-value fun. If you want more, a Magnum Edition is also available.

EXPLOSIVE ACTION



The FireCap target uses toy ring caps that you might have used as a kid. Lift the target plate and fit the caps over the firing pins.



Seat the caps, close the target plate and get shooting – the plate will be blown up and move out of the way after a successful hit and detonation.



The FireCap comes with a pack of yellow self-adhesive stickers, which will eventually get shot away – Birchwood Casey 1in Target Spots are a good substitute when you run out of these.

Firebird Targets (www.firebirdtargets.co.uk) makes two types of target for airgun use, and shotgun and live-fire targets are also available. The 40mm airgun variants come in standard or quiet format.

The standard targets explode when hit, delivering flash, smoke and noise, while the quiet targets tone down the noise considerably. However, they still make a bit of a racket, so consider your neighbours if you're intending to shoot these in your garden. Each target is single-use only and costs about £1, so you may want to use these sparingly as a reward for making more challenging shots. ●


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ON TARGET

PRACTICAL TIPS AND INSIGHTFUL VIEWS FOR TARGET SHOOTERS



Using an adjustable stock allows the gun to be made to fit the shooter

ON TARGET #1

CORRECTLY ADJUST YOUR STOCKS

Adjustable stocks are hugely popular – and properly applied, they can make a big difference to your shooting, as Mark Camoccio demonstrates



YOUR EXPERT
MARK CAMOCCIO

Many factors need to be taken into consideration where rifle shooting is concerned, and if consistent performance is required, then every aspect of the process needs to be evaluated. When looking at adjustable stocks I admit to taking a rather relaxed approach; however, my casual stance resulted from the fact that the majority of guns I purchased just seemed to fit me pretty well. I basically got away with it, yet if I'd felt the need I certainly would have made changes.

Just lately, however, I've used a couple of rifles whereby I've noticed the need for a properly supportive cheekpiece, for example, and have been reminded of the benefits of correct fit.

MR AVERAGE

Of course, as in many areas of life, airgun manufacturers design their products to fit the average customer. Most shooters will fall within these measurements by and large, but there's always likely to be a sizeable number who feel short-changed and aren't prepared to compromise.

In today's airgun market, increased sophistication across the board is giving rise



A small screw underneath the cheekpiece allows for sideways offset adjustment

"THE COMBINATION OF BUTT AND CHEEKPIECE REALLY CAN MAKE ALL THE DIFFERENCE"

to a number of specialist adjustable stocks, sold as aftermarket accessories, as well as a greater amount of guns overall fitted with adjustable features as standard. It's a healthy situation and one which should benefit us all in the long run. The adjustable elements of a stock can be broken down, with the most common being the butt and cheekpiece. The combination of both of these really can make all the difference.

BUTT

The cheaper variety can be bought as an add-on, and will normally consist of a small metal plate screwed to the gun and a pad section which can be moved up and down the axis before being locked in position at the desired point. The idea is to maintain consistency by placing the butt pad in exactly the same spot within the shoulder every time while altering the set height if you find yourself straining. Slide down the pad and lock it off, and the gun will now sit much higher in the shoulder, with the mounting point being the same.

More sophisticated butt pad designs are now allowing for rotation to the left or right as well as height adjustment, which is great. Within HFT/FT competition circles, there is a trend for using a butt hook, which is normally a three- to four-piece assembly of metal construction. These stem from match rifles and can be adjusted to suit the shooter's individual preferences.

ESSENTIAL TECHNIQUE: SETTING THE SCOPE IN POSITION

WITH the image central, we need to achieve perfect eye relief – this is the distance between the eye and the rear ocular lens, and where a full, clear edge to edge picture is achieved. Obtaining the perfect position for the scope on the gun's rail is another part of the process and one not to be rushed. We're aiming to position the scope in a position that allows our head to fall naturally into place, free from stress and muscle strain.

With the scope in the mounts, sitting on the gun but not fully tightened, close your eyes while mounting the rifle. Open them and if you don't have a full clear sight picture gently push the scope forwards or back until it's achieved. Repeat until everything falls into place naturally.

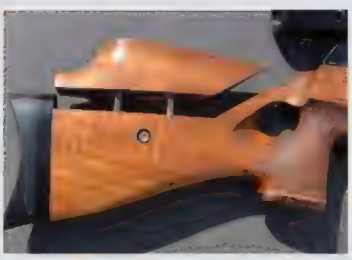
An adjustable butt pad can take several forms, from basic to sophisticated



TARGET INSIGHT: FIXED OR ADJUSTABLE?



THE majority of production factory stocks come with a fixed cheekpiece, but aftermarket custom stocks can be purchased. This sporter design from Custom Stock in Sheffield can offer a far more prominent cheekpiece with a higher than standard sight line support. These can be perfectly satisfactory for many shooters.



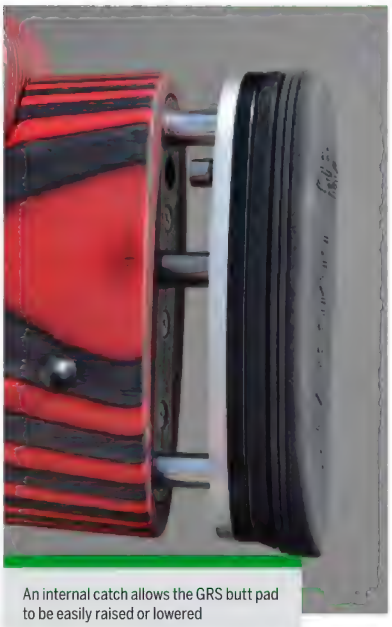
THIS is a classic adjustable cheekpiece that can be modified on its support rods and locked into position by tightening the Allen bolt. There is also provision for the cheekpiece to be offset to one side via further screw adjustment on the underside; this enables the shooter to set the stock to allow for a perfect head position all round. The butt also adjusts for height.



NEW to the market are GRS custom stocks. These allow for full and easy adjustment in the field using large push-button adjusters. Simply press and adjust the cheek for length of pull and then for height via the internal button once the assembly is extended.



An adjustable Wegu-style rubber butt pad will help achieve the perfect set-up



An internal catch allows the GRS butt pad to be easily raised or lowered

TARGET INSIGHT: KEEP IT SIMPLE

AS I will never tire of saying, best practice guidelines can help set up a rifle, but personal preference can dictate the path we take. I always look at kit from a competitive angle, with HFT being my main passion these days, yet I'm aware that many shooters are content to take a straightforward approach and keep everything simple.

Adjustable stocks and all the finer points of competition paraphernalia are seen as overblown irritations to such shooters. But if you are among the band of enthusiasts who strive for consistency, guns with more sophistication and adjustable elements will pay dividends in the long run.

Just don't rush things. Simply make small adjustments to each component over several shooting sessions. When you get into position, and everything feels right with no effort, it will all have been worthwhile.

Some more sophisticated designs effectively allow the length of pull – the measurement between the tip of the butt and the trigger blade – to be altered. To achieve the correct length check your length of pull, push the rifle's butt pad into the crook of the elbow, relax the arm and note where the trigger finger sits. If it falls way behind the trigger the stock needs to be reduced in length, ideally via an adjustable butt section. If the trigger finger sits in front of the trigger by a good margin the butt should be lengthened. That said, if you prefer a shorter butt, which throws more weight forwards, and everything else is usable then stick with this method.

Several aftermarket modular custom stocks are available; these include the ACZ Ultra which is of metal construction and can be adjusted in most directions. This sophisticated design allows for personal settings and incorporates a butt hook – a metal plate with a paddle top and bottom to keep the gun in the shoulder; the angle of the paddles can be adjusted to suit.

"AN ADJUSTABLE CHEEKPIECE ALLOWS FOR PERFECT EYE SCOPE ALIGNMENT... WHEN THE STOCK PROFILE IS UNABLE TO OFFER ENOUGH HEIGHT"

CHEEKPIECE

An adjustable cheekpiece allows for perfect eye scope alignment – primarily when the standard profile of the stock is unable to offer enough height. Assuming we're now happy with the length of pull it's now time to set the cheekpiece's height.

Several modular stock designs, such as this ACZ Ultra, offer all the adjustment a shooter could need. Note the butt hook



ESSENTIAL TECHNIQUE: SETTING THE CHEEKPIECE HEIGHT

ASSUME the position from which you will be taking most shots, and with the scope tightened enough to keep it in position relax and settle the cheek on the wood. We need to view a circular picture through the scope, and to achieve this consistently place some gentle pressure on the cheek against the wood. If you can see a full image, but feel little or no contact with the cheekpiece, it needs to be raised in its mounting by quarter-inch increments.

Once the sight picture is central to your line of sight, and there is some pressure on the cheek, lock the position with an Allen key.



The cheekpiece is sitting far too low, with no pressure applied to the cheek



The cheek is well-supported, with gentle pressure, so maintaining the sight line

ON TARGET #2

THE IMPORTANCE OF BENCH BAGS

Shooters need to see exactly what their gun is doing if they're to achieve supreme accuracy. Shooting from a stable platform is key, with bench bags often the answer, suggests Mark Camoccio

HOW TO: SHOOT FROM A BENCH BAG



CHOICE

Bench bags are a fantastically simple solution, yet relatively inexpensive. It's rare that something so cheap can have such a huge impact on our results, so they come highly recommended. They can be supplied prefilled but are mainly empty. BSA and Caldwell are two popular brands.



FILLING

Irrespective of brand an empty bench bag will have an entry point into which can be poured the medium. I fill mine with dried split peas or lentils, which are cheap and readily available in a supermarket. They're ideal as they can't easily leak out like sand yet will settle and shape to the touch.



FINE BALANCE

It's important not to overfill the bag. Put enough medium inside so that the full details of the exterior shape are filled but with some space inside. The filling can thus be moulded and allowed to settle where you want it.



TWEAKING

Trial and error will dictate the perfect location under the rifle for each bag. For fine adjustment, gently squeeze both the side of the bag and the rear bag and the image will fall; pinch the front bag and the reticle will rise.



A top-quality pellet pouch keeps ammo dry, dirt-free and always at hand

ON TARGET #3

GEARING UP FOR HFT

Thinking of taking part in the increasingly popular sport of Hunter Field Target? Mark Camoccio runs through a checklist of the essential gear to pack

1 TARGET GLOVE

The use of a target glove has become common in HFT, with an increasing number of competitors appreciating the benefits. Padding makes handling the gun more comfortable but there's more to it than that. A glove offers added grip and support for those devilish standing and kneeling shots as well as adding strength to the fingers for really awkward attempts.

2 PELLET POUCH

There's a plethora of pellet pouch designs available. Many competitors opt for a dedicated pellet box, featuring individual compartments, which stands on the floor. Visit a particularly dusty venue or endure an ultra-wet day, however, and those treasured sorted and sized projectiles are bound to get mistreated. Keeping them tucked away in a pouch will ensure they stay safely out of harm's way.

3 THERMAL HAT

I have a Thinsulate-style woollen hat which I keep in the pocket for cold days – a real insurance against inclement weather. This super-efficient thermal marvel has an uncanny way of maintaining body heat when the going gets particularly bleak.

4 SHOOTING GLOVES

It's stating the obvious, but shooting gloves need to be waterproof. I've shot in woollen gloves which quickly became a miserable, sodden affair in the rain. Get some modern pull-on stretch-neoprene gloves, however, and you'll be forever warm and dry. Look out for those with small rubber dots on the palm for superb grip, and finger slits for assured pellet and trigger handling.

5 WATERPROOFS

A waterproof jacket and trousers offering suitable weather protection are a must in any competitor's wardrobe, particularly those offering a level of comfort and support conducive to good shooting along with several pockets.

6 PROTECTIVE CASE

I transport my gun to my competitions in a super-protective aluminium hard case. However, whilst actually shooting around the course I wouldn't be without my highly portable, ultra-lightweight Bonart case.

Plenty of pockets and compartments are necessary, yet a case that's effortless to carry and can keep the gun free of water and dirt is worth its weight in gold.

7 SHOOTING MAT

Some characters on the HFT circuit seem happy to throw themselves across a hard floor and get caked in mud. I, on the other hand, have long advocated the use of a top-quality, highly durable shooting mat – mine is from RangeSports. I have also used a bean bag, but the shooting mat can double up for kneeling duties too.


All the gear... gives you the best chance of success in the HFT field



MEET THE MASTER MIXER

TARGET SHOOTING ENTHUSIAST **PHIL SHELBOURN** IS ALWAYS HAPPY TO WAX LYRICAL ABOUT HIS ENVIOUS COLLECTION OF RIFLES AND PISTOLS



One advantage of airgun shooting is that everyone can enjoy it at their own level; some will frantically check the competition schedules while others gain much pleasure from collecting. Phil 'The Mixer' Shelbourn, who has recently rediscovered his love of the sport, lies somewhere between these two parameters, as he explains...

Tell us about yourself, Phil, and how you got into airguns.
I come from an engineering background with some sales and service experience thrown in. I remember my first air rifle: after pestering my parents I got a Diana break-barrel .177. This arrived on my 13th birthday, but went three glorious shooting days later. I could hit tin cans and group on paper at 20-odd paces, but the temptation of hitting the ample white bloomers on the washing line next door at 30-odd paces was just too much! The air rifle was duly confiscated until I was more sensible.

What happened next?
I got the Diana back about a month later, and thereafter followed a BSA Major, a Cadet and a Meteor, which I shot until the trigger mechanism broke. A Benjamin pump-up and several pistols followed, but family life then took over and airgunning went on the back burner. Through National Service and good opportunity I have also dabbled with 12-bore clay and rough shooting, .22 small-bore target work, a 9mm pistol and a .357 full-bore rifle as well as .303, 7.62 and .223 at various distances. All good fun but I probably prefer airguns. Much quieter!

So when did you return to the airgunning fold?
That was in 2011. I bought a new BSA Lightning .22, which was light and accurate, and various rifles followed. These included a Daystate Huntsman in .22, a BSA R-10 Mk2 which was accurate and reliable, and a Weihrauch HW 77 in a synthetic thumbhole stock; I've also used an MPR, an Ultimate Sporter and an HFT 500, all from Air Arms and great rifles. Latterly I've added a Hatsan Gladius, a bullpup and the heft of an SA80 which I rather like.

Tell us, Phil, why are you known as The Mixer?
That comes from my fondness for switching different actions with different stocks to make something a little different. My main HFT rifle is now an Air Arms HFT 500, but fitted into an MPR stock. I found the HFT 500's guard too long for upright grip and it fouled my fingers. I've lengthened the stock, too – I use this with an MTC Connect 24 scope and a home-made sun shade. I also have an Air Arms S510 in the HFT laminate stock – it's a little more compact than the Ultimate Sporter and shoots very well.

So you highly rate the Connect as a scope?
Oh yes. I've tried plenty of scopes but prefer the Connect, with its long depth of field and low parallax issue when HFT shooting.

Are you a competitive person, Phil?
When I restarted airgun shooting I joined Brothertoft HFT club. Howell HFT club is also on my doorstep. I shoot on Saturday mornings when possible and visit Lincoln HFT club occasionally on Sundays. I'm not super-competitive, but enjoy the odd competition. Of my most notable results, I have collected a few bronzes, silvers and one gold medal at club level. I enjoy longer range shooting out to 60 yards, although I shot a lot better at Bisley with 7.62 and younger eyes!

And finally, Phil, do you have any advice for HFT newcomers?
Practice is key. Join a club, find good shooting mentors, and once you are committed try before you buy.

ON TARGET #5

USING AN AIRGUN PUMP



Modern airgun pumps have come a long way from the early back-breaking devices. Mark Camoccio is not only a big fan, but recommends using one regularly...

HOW TO: MAKE THE MOST OF AN AIRGUN PUMP



PUMP INDOORS IF POSSIBLE

If possible, pump the gun indoors. Obviously, if you possess a gun with a relatively low shot count, you will probably want to take the pump down the field to charge the gun on-site and extend your shooting time. However, best practice dictates that pumping indoors means there is less moisture in the air, as well as less dirt.



REPLACE THE MEDIUM

I'm a huge fan of the British-made Hill Air Pump: this quality, robust design comes with a proper moisture trap. Hill recommends replacing the medium inside every three months (the dry beans that feel like mustard seeds, although they're not) – and if you don't, it seems a waste of this brilliant feature.



PROTECT THE ADAPTOR AND CABLE

It amazes me when I see some shooters drag their kit outdoors through the wet and dirt. PCP systems are relatively fragile, and don't appreciate dirt and foreign bodies. Keep them in good working order by taking care of the kit. That means keeping dirt out of the cable and adaptor end. A simple bag and elastic band is a good emergency cover.



USE QUICK-FIT SNAP-ON ADAPTORS

I've mentioned it in previous issues, I know, but if you're charging several different pneumatics, use the quick-snap fit connectors from Best Fittings. This makes life so simple, and avoids having to keep connecting and disconnecting adaptors from the charging cable – a practice that can damage threads and lead to a bad air seal.


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ON TARGET #6

SAFETY FIRST!

It may seem like stating the obvious, but the importance of safe gun handling can never be overstated. Mark Camoccio recaps the real-world basics you should never overlook

1 NEVER POINT A RIFLE AT ANYONE!

Simply the most important rule of all. There are *no* circumstances under which it is acceptable to point a gun at anyone. I attend national HFT competitions around the country, and it is no exaggeration to say that I must have three or four gun barrels pointed at me at each event, normally as shooters (often experienced ones) are getting up from the ground. Not good!

2 BREAK THE BARREL

One of the advantages of the traditional break-barrel spring-powered airgun is that the barrel can be broken open at the breech (not cocked) when the shooting has stopped. This simple action instantly makes it clear to everyone around that this particular gun is safe. Get used to doing this action as a matter of course.

3 HAVE A SECURE FIRING LINE

Never make it possible for anyone to accidentally walk into or across the firing line. If you are lucky enough to be able to shoot at home, lock the doors, put signs up, and rope off an area if necessary. It is never overkill. The idea is to make it impossible for an accident to happen, not wonder how it happened afterwards!

4 REMOVE THE MAGAZINE

Remove the magazine from a multi-shot airgun when you're not at the firing line. This prevents the risk of the gun being loaded when you don't need it to be. If you attend an HFT competition, this is actually a requirement laid down in the rules, but it has to make sense at local club level too, or at home. Leaving a gun lying around with several shots ready to fire really is a disaster waiting to happen... and it's so easily avoided.

5 UNCLIP THE LEVER OF AN UNDERLEVER

Like a break-barrel, an underlever airgun can be shown to be safe by the lever hanging, unclipped at the muzzle. Again, don't cock the



action: just unclip the lever, and it will hang down a few inches, signifying that the action isn't primed.

6 LEAVE THE BOLT OR SIDE-LEVER OPEN

With pre-charged pneumatics, leave the bolt or side-lever open where possible, as this shows the gun cannot fire and is safe. Use a small brightly coloured range safe indicator if possible: these are just brightly coloured pieces of plastic that sit in the breech, again showing the gun is safe.

7 STORE GUNS & AMMO SAFELY

Store all guns and ammunition safely away from children. Again, a disaster can only happen if you allow it! Lock everything away so they just can't access what they clearly shouldn't.

8 NEVER FORGET POINT 1!

We seem fairly casual about airguns, probably because of their comparative lack of noise. If you waved a shotgun around to the same extent as is often the case at our national airgun competitions, you would be escorted from the premises. Think at all times! There is no excuse.



Breaking the barrel (not cocking) of a break-barrel rifle instantly shows it's safe



Watch where that barrel is pointing!

ON TARGET #7



THE SURPRISE SHOOTER

HUNTER FIELD TARGET SHOOTING CONTINUES TO ATTRACT SHOOTERS FROM ALL WALKS OF LIFE. **RHIAN JONES** SHARES HER EXPERIENCES

Sometimes life can take you in unexpected directions. Rhian Jones' interest in shooting began in the most casual way possible, but she went on to develop her skills to a national and international level. Here she explains how she got there...

Tell us a little about yourself, and how you got into shooting.
I've lived in North Wales all my life, and I'm a nurse in a local hospital there. The shooting started back in 2011, out of the blue really. I just went to see what all the fuss was about, after my husband had taken it up, and was quite excited about it. I really enjoyed it, and before I knew it, I'd bought my own rifle.

Back then I had an awful lot to learn, since I had never picked a rifle up before, and had no idea what I was doing. I've really enjoyed the journey, though, learning along the way. I'm a member of the Fort Airgun club and that has been great, as there are a lot of good shots there to spur you on.

Have you tried other disciplines?
I love HFT and spend a good deal of my time competing in that, so I just haven't felt the need. I'm not sure I'd have time anyway.

What's your favourite rifle?
I've not found any other rifle that fits like the Air Arms MPR – so much so, that I currently have two of them! They aren't too heavy, yet the accuracy is brilliant.

One of mine is pretty much factory-standard, but the other has had a regulator fitted to it. They're just great. It's a real shame that Air Arms doesn't make them any more.

And what about scopes? We see you've taken the Connect route, with its super-short eye relief. They seem to be everywhere just now in HFT.
Yes, that's right. It's an MTC Viper Connect SL. They are very popular on the HFT circuit, but I just find on the whole, it works well for me – well worth a try if you've never used one.

What's your most satisfying moment in HFT to date?
I'm a member of the Air Arms team, which has meant a lot to me, but I was very proud to qualify for the Welsh team for 2016 and 2017. The ladies circuit is very competitive, but a lot of fun, and I really enjoyed shooting in the open category in 2016. But winning the Ladies title in the UKAHFT National Series in 2015 took some beating. I've also had several other local and North West Gauntlet Ladies wins along the way, which has been great.

You've had a good run, then...
I've had lots of fun shooting HFT and met lots of people, many who I now consider friends. Anybody can take part at any level and have a fun day out. That's the beauty of the sport – and we're often shooting in really pretty country locations, through a wood, or across fields.

You're right. It does seem to appeal across the board. Have you got any parting advice?
As a new shooter, listen to the advice people give you, then decide what works for you. There are a lot of shooters out there with a wealth of knowledge, and most are friendly and keen to help. Most importantly, though, if you have a bad day, try to take something good away from it, as it's not all about the scores. Everyone has to start somewhere.

But don't keep changing everything. Find the kit that works for you, and stick to it.



Rhian's favourite rifle is the Air Arms MPR

HUNTING

One for the pot! 114
With a rise in rabbit numbers causing problems around the pony paddocks, extra support is needed...

Egg-streme corvid control 120
Bait-and-decoy tactics outwit marauding magpies

Go nuts for garden greys 126
When grey squirrels start wreaking havoc in a country garden, a feeding station brings them to book





THE QUARRY

RABBIT

THIS agricultural pest has a reputation for rapid breeding. Peak mating season runs from early spring through to late summer, and does can produce litters of up to six young every other month, so numbers can rapidly escalate. Rabbits cause major problems when they establish themselves around pony paddocks, eating grassland feed and digging hazardous holes.



©Anne Burgess

ONE FOR THE POT!



With a rise in rabbit numbers threatening to cause problems around the pony paddocks, Mat Manning calls in extra support to bring the bunnies to book...

IN THE BAG

THE RIGHT GEAR FOR A RABBIT STAKEOUT

ALL you really need for a successful ambush is an airgun, a pocketful of pellets and some patience. But having the right hardware and accessories can make your time in the field more productive and more enjoyable. Mat's selection includes an air rifle known for its longer-range performance, a bipod for added stability, a rangefinder for accurate distance calculation, a sharp knife for game prep and a pair of disposable gloves to keep his hands clean.



1. AIR ARMS S510 ULTIMATE SPORTER

www.air-arms.co.uk

£956.00

The Ultimate Sporter has a reputation for accuracy, which is a huge help when taking longer shots from a bipod, and its Q-Tec silencer makes it quiet to use around livestock.



2. HAWKE RANGEFINDER

www.hawkeoptics.co.uk

£149.99

It's vital to know your ranges, and this neat tool calculates distance at the press of a button. Mat's old LRF 600 has been superseded by the even more compact Hawke Hunter.



3. HARRIS BIPOD S-BR 6-9

www.uttings.co.uk

£119.99

Mat's been using the same Harris bipod for over 10 years. The 6-9-inch model provides just enough reach, and it's easy to keep shots level due to the extending legs and tilt base.



4. OPINEL NO. 7 KNIFE

www.bisley-uk.com

£8.99

This versatile little knife lends itself brilliantly to paunching rabbits, and its inexpensive price offers real value for money. Mat's is the carbon blade version – it's seen better days but still takes a good edge.



5. KINGFISHER DISPOSABLE GLOVES

www.amazon.co.uk

£7.25 *(100 pack)*

These disposable gloves are a great way to keep your hands clean when paunching rabbits. And being so thin, they still enable you to control exactly what you're doing.

16:30 RIGHT TIME, RIGHT PLACE

HOURS spent targeting rabbits when they're underground are hours wasted, and it's vital to be within range when your quarry emerges. Rabbits have excellent hearing and an uncanny ability to detect vibration through the ground – they may not hang around if Mat is forced to crawl in closer for the shot.

Rabbits leave plenty of clues to reveal where they spend their time above ground. On this holding, burrows provide an obvious indication of where the resident bunnies live and where they're likely to appear when they venture out to feed. Active burrows usually have freshly excavated soil around them – any that are blocked up with twigs and leaves are no longer in use. Patches of closely cropped grass provide further evidence of feasting rabbits, and dark, moist droppings suggest that it's not been long since the culprits' last visit.

At this time of year rabbits usually come out to feed towards the end of the day, so Mat has timed his visit to stretch from late afternoon into the evening.



ESSENTIAL TECHNIQUE





EXPLOIT YOUR SPARE HAND

WHEN using a bipod, your leading hand becomes redundant because the forend of the airgun is already supported. In this situation, holding the forend or grabbing the bipod can actually hinder accuracy by transferring any subtle body movement from your pulse, trembles and breathing motion to the gun.

Instead, clench your spare hand into a fist and place it beneath the butt. Your fist now provides support at the rear of the gun, but it also creates a means of adjusting aim by tensing and rolling your fist to tweak the angle of the gun. Exploit this added level of control to get shots bang on target.



"RABBITS HAVE EXCELLENT HEARING AND AN UNCANNY ABILITY TO DETECT VIBRATION THROUGH THE GROUND"

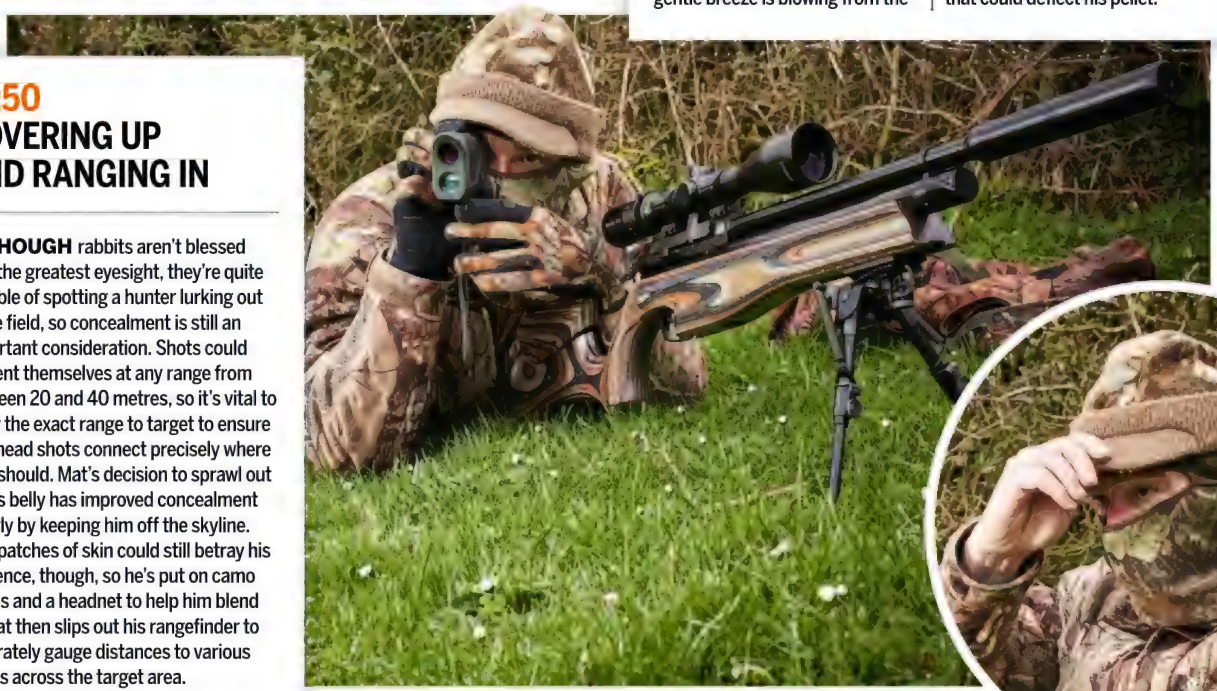


16:45 DIGGING IN

WITH a promising spot earmarked, the next task is to find a suitable position to cover it from and get comfortable. Mat has settled on an area about 30 metres from where he expects his quarry to appear. This puts him within optimum range, plus it also offers a clear view out to 40 metres or more if any bunnies should emerge further away. The gentle breeze is blowing from the target zone towards Mat's hiding place, ensuring that any human odour is carried away. The bipod legs are extended to get a comfortable shooting position and keep shots clear of the tussocks of grass, and a quick check through the scope confirms a couple of places where Mat will have to make sure shots are kept clear of nettle and thistle stalks that could deflect his pellet.

16:50 COVERING UP AND RANGING IN

ALTHOUGH rabbits aren't blessed with the greatest eyesight, they're quite capable of spotting a hunter lurking out in the field, so concealment is still an important consideration. Shots could present themselves at any range from between 20 and 40 metres, so it's vital to know the exact range to target to ensure that head shots connect precisely where they should. Mat's decision to sprawl out on his belly has improved concealment greatly by keeping him off the skyline. Pink patches of skin could still betray his presence, though, so he's put on camo gloves and a headnet to help him blend in. Mat then slips out his rangefinder to accurately gauge distances to various points across the target area.



17:25 ONE IN THE BAG!

WITH all the preparations made, the session turns into a waiting game. Rabbits can be reluctant to leave their burrows after the disturbance of a shooter's arrival so patience becomes the hunter's most valuable skill as peace returns to the countryside and the rabbits regain their confidence.

After just over half an hour of waiting, a rabbit emerges above ground and gradually creeps out from cover. It's around 20 metres away. It's a close shot, but this rabbit is on edge, constantly sitting up with ears erect and nostrils twitching for signs of danger. Thanks to his careful preparation Mat hardly has to move to train his Air Arms Ultimate Sporter onto the target.

The bipod takes the weight of the gun, and the crosshairs soon settle on the rabbit's skull. A touch of the trigger and the sound of the impacting pellet rings out...



"IT'S A CLOSE SHOT, BUT THIS RABBIT IS ON EDGE, SITTING UP WITH EARS ERRECT AND NOSTRILS TWITCHING"



17:50 BUNNY BONANZA

IT'S not unusual to start feeling fidgety after an hour on your belly, but it's worth staying put if you can. Breaking cover to retrieve shot quarry causes extra disturbance that could ruin your chances of more shots.

Patience pays off and two more rabbits soon emerge. The first is some distance away but, by giving the shot a touch of holdover and thanks to the additional support provided by the bipod, it's a clean strike. The second is fidgety so Mat gives it a squeak through pursed lips. Startled, the bunny sits bolt upright offering a clear shot and the tally's up to three.

EXPERT TIP

ODOUR ALERT!

NEVER underestimate the importance of scent (or, more to the point, concealing scent) when targeting rabbits. These burrowing mammals have an extremely sensitive sense of smell, and will often refuse to come above ground if they get a whiff of danger.

Smells that really put bunnies on edge are the strange ones they wouldn't usually come across in the countryside, and especially odours associated with the human world. Setting up downwind of where you expect your quarry to present itself helps to waft those odours away from inquisitive nostrils, but go easy on the aftershave and deodorant too.

18:30 PICK UP AND PREP

ACTION can soon tail off – a result of reducing the number of rabbits in the vicinity and the fact that losses will put remaining bunnies on edge. Shot rabbits need to be paunched at the end of the session to prevent the meat from becoming tainted and reduce the amount of mess you have to deal with at home. After almost two hours on his belly Mat decides to draw the session to a close. He breaks cover and collects the three rabbits that he's managed to account for – not a huge bag, but regular sessions like this help to keep numbers in check after a heavy winter's lamping. These rabbits aren't big – about half to three-quarters grown – and that makes them perfect for the pot. Mat wraps up by paunching his haul. Rabbit's on the menu tonight!






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THE QUARRY

MAGPIE

NEST-ROBBING magpies can have a serious impact on songbirds and game birds. These sharp-eyed corvids have a knack for spotting parent birds flitting back and forth from their nests. Once they pinpoint the nesting site they swoop in and help themselves to the eggs or chicks within – and they won't let up until the nest is empty. So concealment and stealth are the bywords.



©Ross

"NEST-ROBBING MAGPIES CAN HAVE A SERIOUS IMPACT ON SONGBIRDS AND GAME BIRDS. CONCEALMENT AND STEALTH ARE THE BYWORDS"

EGG-STREME CORVID CONTROL

Mat Manning uses bait and decoy tactics to outwit marauding magpies intent on plundering the nests of vulnerable birds



JARGON BUSTER

CORVIDS: Members of the crow clan belonging to the family *corvidae* and referred to as corvids. These include the carrion crow, rook, jay, magpie and jackdaw – all of which are exceptionally cunning birds.

LARSEN TRAP: A cage trap used to control magpies. A live magpie is kept in one section of the cage. Corvids have a very strong territorial instinct and soon swoop in to confront the captive bird – usually to be trapped by the sprung door.

SITTY TREE: A prominent tree that birds use as a perch, usually to survey the scene below. Corvids and pigeons that are too wary to land on the ground will often settle in sitty trees close to a decoy set-up.

IN THE BAG

KEY KIT FOR PICKING OFF NEST-ROBBING MAGPIES

THE OPPORTUNITY to even take a shot at a crafty magpie doesn't come easily, so Mat has chosen gear to help him optimise every chance that comes his way. Mat is well aware that he needs to work smarter, not harder, to be in with a chance of a shot at one of these cunning creatures, so the line-up includes a decoy to help draw the birds within range, a compact PCP with a reputation for accurate shooting and a tripod to provide rock-steady support for the gun.



FLOCKED MAGPIE DECOY
www.jackpyke.co.uk
£6.95
This lightweight decoy is easy to carry in a kitbag. Realistically proportioned, its bold black and white markings do a great job of catching the eye of passing magpies. This version has a flock coating that gives it a more lifelike appearance.



BSA ULTRA SE
www.bsaguns.co.uk
£549
Short and pointable, the Ultra lends itself ideally to shooting from a hide. It's also accurate – thanks to BSA's famous cold hammer-forged barrel – and its slick magazine-fed loading system means fast follow-up shots are always on hand.



PRIMOS TRIGGER STICK TALL TRIPOD
www.bisley-uk.com
£149.95
Squeeze the trigger and the telescopic legs silently slide up or down. Release the pressure and they're locked in place, providing rock-steady shooting from myriad positions – ideal for longer-range shooting.

16:00 FAKE NEST RUSE

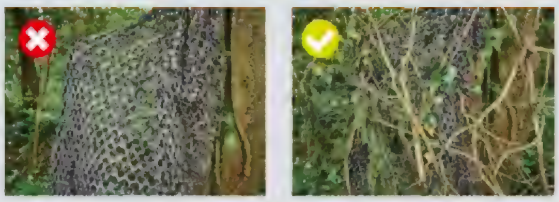
MAGPIES are always on the lookout for an easy meal, and eggs rate highly on their menu during the nesting season. Although exceptionally wary, these birds can be lured within range by tempting them in with what appears to be a vulnerable nest.

Mat gathers a few handfuls of dry nettle stems. These are twisted into a circle to imitate the form of a nest and placed on the ground in a prominent spot about 25 metres from Mat's hiding place. More stems are placed in the centre of the circle to create a base onto which Mat nestles two hens' eggs. One of the eggs is cracked to reveal its contents, making it even more irresistible.

The scene is completed by the addition of a magpie decoy – this will attract the attention of passing corvids and create an element of competition that should make them bolder.



ESSENTIAL TECHNIQUE



DRESS FOR SUCCESS

ALTHOUGH camouflage hide netting often provides sufficient concealment, you'll need to dress it to go undetected by magpies. The straight edges of a camo screen may stand out against a natural backdrop, but it's easy to obscure them by dressing your hide with vegetation and branches. Mat weaves weeds such as ivy, nettle stems and docks into the netting to help it blend in with the countryside – but remember to check with the landowner before you cut down anything. When dressing a hide, always leave 'windows' to shoot through, and attach branches and vegetation flat to the netting to avoid fouling the muzzle.



16:10 SETTLING IN

CORVIDS have very sharp eyesight and won't be fooled by the bait and decoy if they think there could be danger lurking. For this reason concealment is of paramount importance and a hide is usually required.

Mat built his hide several days previously to give the birds time to get over the disturbance. It's sited in a place that provides a clear view of, and clear shots to, the area around the fake nest and decoy. From here Mat can cover a sitty tree, which could allow him to pick off any magpies that hang back to observe the set-up from a seemingly safe distance.

Once settled in the hide Mat puts on his head net. Although he's shooting from behind a camouflage screen, it still pays to guard against flashes of pale skin that could give the game away.

> "CORVIDS HAVE VERY SHARP EYESIGHT AND WON'T BE FOOLED BY BAIT AND DECOY IF THEY THINK DANGER LURKS"

17:15 TIME FOR THE CALLER

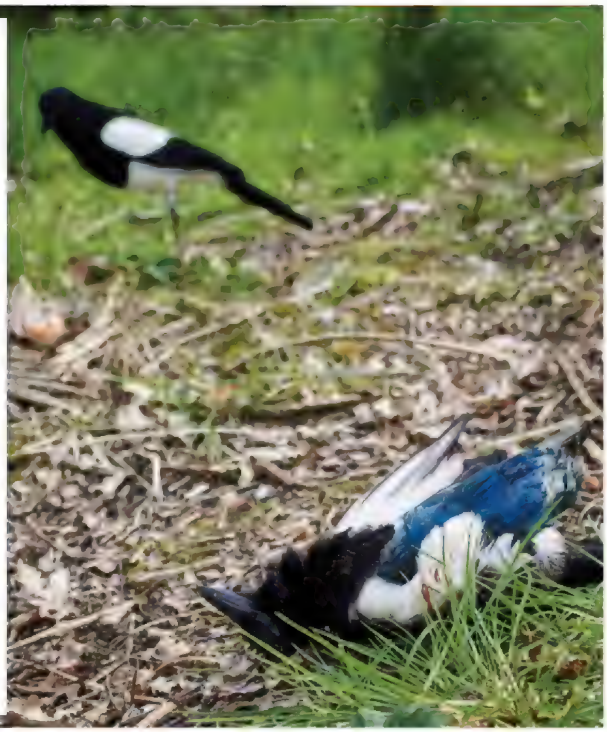
THE fake nest and imitation magpie set-up won't attract birds if they don't spot it. One way to steer their eyes towards the target area is to grab their attention with a caller.

After a long quiet spell with no sign of a magpie, Mat decides to take action. His caller is a simple device made by placing 15 or so heavy .22 pellets inside an old 35mm film canister to create a rattle that sounds just like the call of a magpie.

Mat gives the caller a few brisk shakes to mimic the chatter of an agitated magpie. A few minutes of intermittent rattling provokes a response, and Mat imitates the bird's chatter. The rattle is left silent as the incoming bird gets closer as Mat doesn't want the sound to give his position away.



17:25 A BIRD IN THE BAG



EVEN when presented with a free meal corvids are twitchy birds and don't tend to hang around. Opportunities need to be taken quickly as these birds have a habit of flitting in and out in the blink of an eye.

The magpie that was drawn in by the caller spots the fake nest and swoops into a nearby tree. Mat tries to get a bead on it, but the bird refuses to keep still and soon takes to the wing again. All is not lost, though, as it appears to be heading for the nest.

The magpie pitches on the ground close to the decoy set-up and stares in bewilderment at the fake bird. Mat's on it in an instant, and cleanly dispatches the nest robber with a smack to the chest. Although Mat is a big advocate of head shots, magpies are relatively small birds and a solid shot to the heart and lung area will often result in a swift kill.

EXPERT TIP

LOCATION, LOCATION, LOCATION

MAGPIES won't automatically flock to an area just because you set up a decoy and bait. You need to target a zone they're already patrolling – so reconnaissance is key.

Keep your eyes peeled for fleeing magpies, and listen for their chattering calls when you're out in the countryside. Magpies favour woodland edges, small copses and overgrown hedgerows – where other birds are likely to nest.

Locating a good spot is your cue to build a hide and prepare for the ambush. Get yourself set up and your fake nest will soon grab the magpies' attention.



17:50 ACTION STATIONS

THE first kill can leave the hunter in a quandary. The sight of a dead bird may spook others, but sometimes scavenging corvids will swoop in to investigate the corpse of a fallen comrade.

Another magpie duly breaks the silence and is clearly agitated by the sight of the shot corvid – but it's also curious and flutters into a sitty tree that's well within range. Mat wastes no time in adding it to the tally. And he's soon in action again as a passing crow clocks the decoy set-up. The corvid circles briefly before gliding in. Taken off the Trigger Stick tripod, Mat easily secures his hat-trick.

19:05 CLEARING UP AND CLEARING OFF

ACTIVITY can go from hectic to non-existent in no time when targeting corvids. The fake nest should earn you some shots early on, but it's likely to be treated with suspicion after a few losses.

However, nothing happens during the following hour – even the caller fails to generate a response. Patience is a vital ingredient to successful shooting, but so is knowing when to move on, and it looks like it's time for the curtain to close on this session.

Mat breaks cover and collects his brace of magpies and solitary crow. Three birds may not sound like much, but it's a decent result when pitting your wits against artful corvids, and it'll make a difference to the success of the pheasants and songbirds on this ground.



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THE QUARRY

GREY SQUIRREL

THE grey squirrel is a very successful invasive species that has had a detrimental impact on native British wildlife. This robust rodent destroys trees by stripping back their bark to access the sap that flows beneath, and also has a taste for the eggs and chicks of songbirds. Although the owners of this property want to see the resident songbirds flourish, they're even more concerned about squirrels chewing wires in their attic.



GO NUTS FOR GARDEN GREYS

Called in to deal with grey squirrels that are wreaking havoc in a country garden, Mat Manning sets up a feeding station to bring the persistent pests to book



IN THE BAG

KITTING OUT FOR A FEEDING STATION FORAY

MAT'S picked out three key items from this session. First, he's gone for a pair of gloves that provide excellent feel and grip while hiding any tell-tale patches of skin. Next up is the all-important bait. Grey squirrels are greedy and have a broad diet – offering them something they really like is the best way to switch them on to your feeding station.

The third item is a backpack with capacity to hold Mat's stakeout essentials including snacks, a drink, and even more peanuts to replenish the feeder at the end of the session.



MACWET CLIMATEC GLOVES

www.macwet.com

£29.99

Designed specifically for outdoor sports, these gloves feature an Aquatec membrane, which gives an awesome feel and grip, wet or dry. They come in 14 different sizes, based on the measurement of your palm to guarantee a perfect fit.



PEANUTS

www.amazon.co.uk

£21.99 (12.5kg sack)

Squirrels enjoy wheat and maize, but peanuts are by far the most effective bait if you can stretch to the extra cost. Buying in bulk is a great way to keep the price down. Pet shops and garden centres stock them, but you'll probably find a better deal by shopping online.



JACK PYKE 25L RUCKSACK

www.jackpyke.co.uk

£33.95

Made from tough Cordura, this backpack has the capacity to swallow up hunting essentials between its main compartment and zipped pockets – and its padded shoulder straps and quick-release waist belt ensure that it's comfortable to carry.

JARGON BUSTER

FEEDING STATION: An area set up to attract quarry to a predetermined spot by offering food as bait. Feeding stations enable you to take shots over confirmed distances and with a sound backstop in place.

NUTHATCH: A handsome woodland bird, the nuthatch is shaped like a small woodpecker, with a blue/grey back, chestnut sides and a long black beak. Nuthatches often visit gardens, especially when there are peanuts on offer.

STANCE: The position from which the shot is taken. Airgun hunters often find themselves shooting from a standing, kneeling or sitting stance. The sitting stance offers a very stable shooting platform.

10 DAYS AGO NUTTY ATTRACTION

WITH squirrels spending time in the garden trees, foraging on the lawns and raiding the attic, they could show themselves virtually anywhere. That can make controlling them a pretty hit-and-miss affair, so Mat has decided to set up a feeding station – a 'honeypot' area that enables him to optimise his hunting time.

The obvious site for the feeder is on a large oak tree, which is likely to be home to a few of the offending squirrels. The thick trunk will also serve as a very solid backstop. Mat nails the wooden hopper about five feet off the ground, out of the reach of any marauding badgers.

Although wheat and maize will attract grey squirrels, peanuts work even better. They're not cheap, but squirrels struggle to resist them – even at this time of year when there's no shortage of natural food around.



"MAT SETS UP A FEEDING STATION – A 'HONEYPOT' AREA THAT ENABLES HIM TO OPTIMISE HIS HUNTING TIME"

10 DAYS AGO
A DISCREET HIDING PLACE

SQUIRRELS tend to lose their caution when they're distracted by an easy meal, and they often become very bold when they've developed a taste for peanuts. By the time the bushy-tails are queuing up for Mat's offerings, it should be possible to ambush them from natural cover; but setting up a hide will maximise his chances of going undetected.

Mat has set up a camouflage net about 20 metres from the feeder. That should be far enough away to avoid suspicion from the squirrels, yet close enough for comfortable shots with a legal-limit air rifle.

It's only a simple screen, and Mat hasn't gone to the trouble of dressing it with vegetation, as this sort of assignment doesn't demand an elaborate hide. The screen will have been in position for more than a week before the first shoot – that should give the squirrels more than enough time to accept it as a harmless feature of the landscape.



ESSENTIAL TECHNIQUE

GET YOUR TIMING RIGHT

THERE'S no need to hurry when a squirrel shows up at the feeding station. In fact, your shots are far more likely to result in clean kills if you take your time.

Squirrels can be very jumpy when they first venture down from the trees and onto your feeder, especially if there are one or two shot ones on the ground. Take a shot before they settle and you could end up missing your target or, worse still, wounding it.

The best ploy is to wait until the squirrel has clambered right onto the feeder and helped itself to a peanut. At this point, it will probably settle to nibble at the nut – offering you a clear, still shot at its head.



Wrong: Shoot at a squirrel before it settles and you risk missing or, worse still, wounding your target.



Right: Wait for the squirrel to settle down to feed and you'll get an easy shot at a static target.

07:45
SETTLING IN

PATIENCE is the key to success when you're targeting a feeding station. Mat set up his hopper 10 days ago, and the number of visiting squirrels has gradually built up. The peanuts are going down fast now, and that's Mat's cue. He checked the feeder yesterday evening. He also topped it up, so he knows there's bait in there today and doesn't need to cause any additional disturbance by inspecting it before he heads for the hide.

It could be a long wait, so Mat has brought his beanbag seat to keep him comfortable. He's also brought a bottle of water and a banana: the last thing you want during a stakeout is to have to break cover, or even cut the session short, because you're thirsty or hungry.

After putting on his headnet and gloves to hide any flashes of pale skin, Mat settles down to await the arrival of the day's first diners.





08:05 THE FIRST ARRIVALS

APART from enticing grey squirrels down from the trees, peanut hoppers also provide rich pickings for songbirds. True to form, today's first arrivals are of the feathered variety, and a steady procession of finches, nuthatches and even a woodpecker drop in to peck at the peanuts before the squirrels put in an appearance. Although the birds are pinching Mat's bait, he's happy to see them at the feeder – the activity caused by them fluttering back and forth is likely to attract the squirrels' attention before long.

Sure enough, the winged diners soon vacate the feeder when a hungry bushy-tail comes slinking down the trunk of the oak. The squirrel is initially fidgety, so Mat gives it time to grab a peanut and settle down to feed before lining up for the shot. With the squirrel at ease, Mat's presented with a static target – a sitter at 20m from his stable sitting stance – and it's one in the bag.

08:45 A BUSY HOUR

ALTHOUGH it can vary from place to place, and from season to season, grey squirrels tend to have preferred feeding times, and it's not unusual for the first arrival at the hopper to soon be followed by more.

After making the first addition to the day's tally, Mat soon clocks another squirrel. It's up in the treetop, though, and the shot could be a risky one, so Mat leaves it. However, it doesn't take long for the squirrel to give in to the allure of the peanuts, and it soon comes clambering down towards the feeder. When the bushy-tail reaches the banquet, it's the same routine as before: Mat waits until the squirrel is tucking into a peanut, then picks it off with a head shot.

The peanuts really are working their magic today, and more squirrels follow over the next hour or so – proving just how effective feeding stations can be for concentrating your quarry.



EXPERT TIP

PATIENCE AND PERSISTENCE PAY OFF

THE temptation to start shooting as soon as you see evidence of squirrels visiting your feeding station can be a strong one, but you need to resist it. Begin the cull too soon, and the other squirrels could become spooked before they've had a chance to get hooked on the peanuts.

Leave the feeder undisturbed (apart from topping it up if necessary) for at least a week after you see the first signs of visiting squirrels. As they make more visits, the bushy-tails will grow in confidence and learn to accept your hide.



10:25 RETRIEVE AND REPLENISH

AFTER a hectic spell, the action tails right off. Mat's not surprised – the squirrel population here isn't massive (certainly not the numbers he'd expect to encounter in woodland), and he's clearly made a dent in their ranks. In any case, Mat is eager to leave the hide and stretch his legs.

It's not time to head for home just yet, though. The session has been a success, but Mat is in no doubt that there are more squirrels to be had, so he refills the feeder with peanuts before he leaves. By keeping the feeding station going, Mat can ensure that he hits the squirrels as hard as possible – it may even attract a few from further afield, and shooting them will help delay their comeback. Mat will be back here again in a few days.

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The Airgun Show

Presented by experienced journalist and Airgun Shooter deputy editor Mat Manning, The Airgun Show is a fortnightly programme *just for airgunners*. We cover every part of the airgun world – from farmyard feral pigeons to big bags of bunnies, from high-speed hunting to high-level HFT. It's all real and all in the field, with dedicated airgunners who really know their stuff – and all that is supplemented by gear reviews and special interest features from those with true airgunning expertise.

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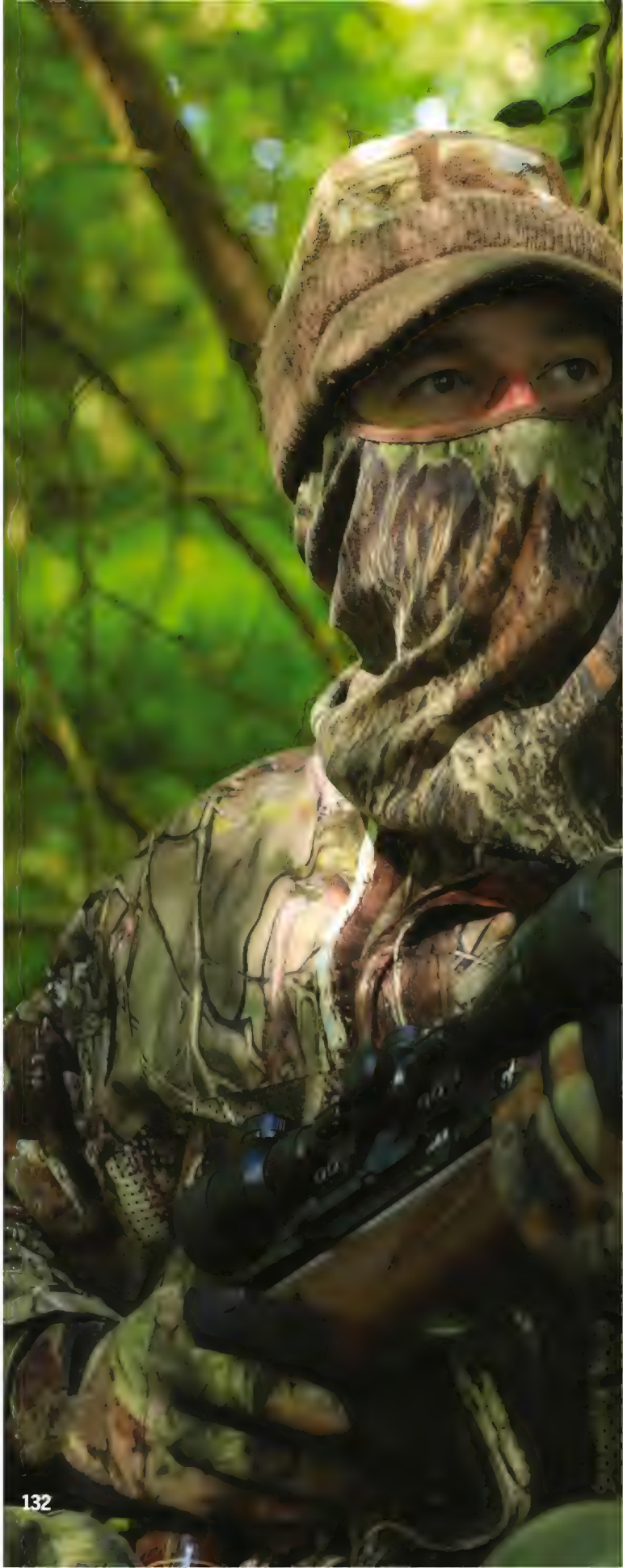
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AIRGUN ANSWERS

Your questions answered
To finish this handbook, a special section tackles some of the most common reader questions

134









EQUIPMENT

Q Do I need to wear hearing protection while I'm shooting with an airgun? They don't seem to be that loud, but I don't want to risk damaging my ears.

YOUR EXPERT
MIKE MORTON



A

MOST legal-limit airguns, whether they're PCP, spring, gas-ram or CO2-powered, don't usually generate enough noise to be harmful to your hearing. However, if you shoot at FAC levels (guns that require a Firearms Certificate), I strongly advise that you consider wearing hearing protection.

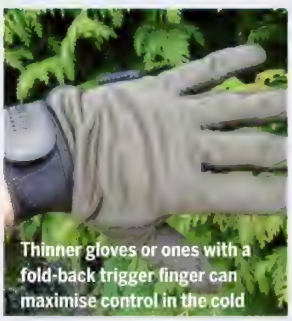
Nevertheless, even sub-12 ft lb rifles are capable of generating uncomfortable levels of noise, particularly those using air strippers. Used outdoors, strippers don't appear to be that loud, but they can produce a noticeably loud bark when they're shot at an indoor range. Strippers are the airgun world's equivalent of a muzzle brake.

And if you ever shoot felt cleaning pellets, such as those from VFG, then hearing protection is a must, especially if they are being used indoors. Any sound that makes your ears ring can't be good for you. Hearing damage is permanent.

You should also consider the environment in which you're shooting. Are you going to be shooting indoors at a club where someone else might be using an air stripper? Are you going to be shooting at a club which mixes airguns and rimfires? If wearing hearing protection isn't already a mandatory club rule, you should treat it as such, and protect yourself.

My preference is to wear in-ear protection around air rifles and sub-sonic .22 LR rimfires, and over-ear protection if you're shooting alongside any powder-burners using supersonic ammo.

EXPERT TIP: BRING SOME GLOVES



Thinner gloves or ones with a fold-back trigger finger can maximise control in the cold

MANY hunters wear gloves all year round because of their ability to camouflage hand movements from quarry. But gloves can be a huge asset when merely plinking outdoors or shooting at a cold indoor range. Temperatures can swing wildly, even in summer, and warm hands mean better control, especially for your all-important trigger finger.

AIRGUN ENCYCLOPEDIA

#1 LASER RANGEFINDERS

They're fairly cheap to own, light to carry and aren't just for hunters...



What are they?
Laser rangefinders let you measure the distance to a particular target, giving a readout in either yards or metres. Today's lasers are eye-safe, although you shouldn't deliberately target someone's face.

What do they do?
They send a beam out to your chosen target. That beam is reflected off the target and is then picked up by a sensor, which in turn calculates the distance.

When should I use one?
Rangefinders are perfect for hunters who want to calculate holdover or holdunder, but are great for measuring specific distances when setting out targets as well.

What should I look for?
Some rangefinders will only operate out to shorter distances, and these are perfect for airgun use. If you shoot centrefires as well as airguns, you may need a model that will range greater distances.

How do I use one?
All you have to do is train the crosshairs on your target and squeeze the activation button – it's really that easy. But you do have to hold the device steady in order for it to deliver an accurate reading.



When looking for a suitable chrono, the Combro, the Skan or a sky screen type are the main options

BALLISTICS

Q I want to chrono my rifle but there are several different types out there and I don't know which is best. Can you offer some advice, please?



YOUR EXPERT
SIMON EVERETT

A **IT** all depends on what exactly you want to get from your chrono. (To clarify: a chronoscope displays the result as figures on a screen; a chronograph shows the results as a print-out.)

The most basic chrono for airguns is the Combro cb-625, which is attached by a hollowed mounting bar to the barrel of the airgun and aligned with the exit from the muzzle. The pellet is then shot over the sensors which sit a few centimetres apart.

The Combro is accurate but liable to being shot by accident – just ask anyone who has ever owned one! Spares are available, and the item can be easily repaired by an expert.

The Skan is the popular choice of RFDs with many clubs, and is used to determine muzzle velocity from all the stock or to check competitors' guns. It is regarded as the industry standard, but is only of use at limited range, from the muzzle out to maybe 10 yards.

The Skan is sophisticated and can self-calibrate with the sensors housed within its tough, steel protective housing. The item also collects the fired ammo in a strong pellet trap and so can be safely used in a confined space; be aware it does require mains electricity to power it, however.

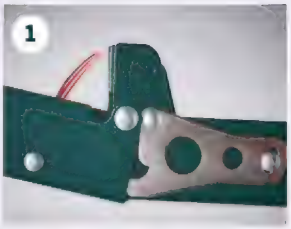
For collating the velocity at range in *Airgun Shooter's* pellet tests, we use a 'sky screen' type and ensure the sensors are set further apart to allow for maximum accuracy.

Various makes of sky screen chrono are available – I use the Caldwell Ballistics Precision, which comes complete with red LED lighting for use under difficult lighting conditions.

If all you want to do is measure the muzzle velocity then the Combro will prove perfectly adequate. On the other hand, if you want to carry out more detailed ballistic research and gather down range data, you will need one of the sky screen types to shoot over at long range.

HOW TO: SET UP A CHRONY F-1

MEASURING muzzle velocity is the most common use for a chrono, and the Chrony F-1 is one of the most widely available models.



UNFOLD AND EXTEND

The F-1 needs to be unfolded before it can be used. Make sure you extend it the whole way, otherwise the reading across the sensors won't be totally accurate. It's powered by a single battery, which should be disconnected after use to prevent it discharging.



USE A TRIPOD

You can place the device on a table or other type of rest, but it's much easier to use a camera tripod to adjust height and angle, ensuring the chrono is perfectly lined up to record your shots. Try not to shoot your chrono! Eye protection is a very good idea, too.



CONSIDER A SKY SCREEN

Chronos can be used both indoors and outside, but can be fickle if the lighting's not exactly right. A sky screen can be used here, but they're a bit tricky to set up and aren't always necessary. Take a shot without one first and see if you get a valid reading.



HUNTING

Q Must I re-zero when switching between different pellet designs for particular hunting applications?

YOUR EXPERT
MAT MANNING

A **IT** is vital to re-zero when you change to a different pellet. Small variations in weight and design can cause a big shift in the point of impact, so it's vital to shoot some paper to find out how your ammo performs over a variety of ranges before targeting live quarry.

HUNTING

Q I want to leave my scope on the same magnification to prevent aim points shifting. Is there a good all-round setting for hunting?

YOUR EXPERT
MAT MANNING

A **MY** hunting scopes are usually set on 10x magnification to cover most scenarios. But it's too high for low-light shooting and at close range, for which I will wind down to 6x. Working out aiming points for two zoom levels offers versatility.



HUNTING

Q I consider my stalking technique to be pretty good but I'm struggling to creep within range of the rabbits on one of my permissions. How can I get to grips with these crafty conies?

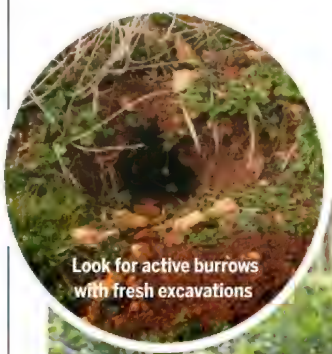
YOUR EXPERT
MAT MANNING

A **STALKING** within range of rabbits can be extremely difficult, especially when frequent shooting pressure has put them on edge. The best way to overcome the problem is to abandon mobile hunting tactics altogether and set up an ambush instead. This static approach almost completely eliminates the movement and noise that's alerting the rabbits to your presence, and gives you the added advantage of taking rested shots from the prone position.

To plan your ambush, look for the places where rabbits are most active – areas where their excavations and droppings are most evident – and pick a spot that'll put you comfortably within range when they venture out to feed. Ideally, it'll be downwind of the bunnies so your scent will be carried well away from their nostrils.

Although some shooters like to sit behind a blind, I don't usually bother with a hide. Instead, I sprawl out on my belly to keep myself away from the skyline, and will often put on a headnet for improved concealment. Shooting prone in this way also means that you can shoot from the support of a bipod, which, with a little practice, can significantly increase your effective range in still conditions.

During the warmer months I like to get into position an hour or so before nightfall, and pick off rabbits as they emerge to feed at dusk. However, don't get up and retrieve rabbits as soon as you shoot them, as the disturbance caused by you tramping close to the warren will put the other rabbits on edge – just leave them where they drop, ready for collection at the end of the session.



Look for active burrows with fresh excavations

"ABANDON MOBILE HUNTING TACTICS AND SET UP AN AMBUSH. THIS STATIC APPROACH ALMOST COMPLETELY ELIMINATES MOVEMENT AND NOISE"



Setting up an ambush reduces the disturbance that can spook skittish rabbits when stalking

EQUIPMENT

Q I need a knife to take into the field, but don't really know where to begin. Can you give me any advice? How much do I need to spend on one?



YOUR EXPERT
MIKE MORTON

A **YOU** didn't say what exactly you wanted it for. Hocking and game preparation? Hide building? General utility? Luckily most tasks the airgun shooter faces can be dealt with using the same knife. As a general rule, fixed-bladed knives are stronger, but folding knives are more practical as the knife takes up less room in the pocket and comes with its own in-built sheath - the handle.

If you do decide to go for a folder, I would suggest buying one with a blade that locks. Folding knives with no lock can be dangerous. Take the example of gutting and skinning a rabbit. If the blade glances off a bone at a certain angle then a non-locking blade can snap shut abruptly, potentially slicing into your fingers. Blade safety is every bit as important as gun safety.

As to price, would you be worried about losing it? Can you sharpen a knife yourself? Do you want to invest in some good-quality cutlery that will last a lifetime? Cheaper knives can be had for around £20 or less. Use them until you either lose them or the edge becomes dull, then either sharpen it, or if you're not too handy with a set of stones buy a new one. A high-end knife costing £100 or more will certainly perform well, but woe betide you if you leave it behind after an NV session. Around £35-40 hits the sweet spot.





The BASC Airgun Team (www.basc.org.uk) answers your airgun shooting-related legal conundrums

Q What are the rules for shooting near footpaths?

A **THE** law makes no distinction between air rifles and more powerful guns for which you need a licence – they are all classed as firearms. This means that any offence you commit can carry a very heavy penalty – and there are at least 38 different offences you should be aware of.

Always ensure you are authorised by the landowner or person with the sporting rights (in writing if possible), and that you know precisely where the boundaries are, on your intended shooting location. It is against the law to discharge any firearm within 50 feet of the centre of a highway (which consists of or comprises a carriageway) in order to prevent any highway user being consequently injured, interrupted or endangered. These offences could be committed when, for example, someone is shooting in their garden close and the pellets ricochet onto the highway.

Also, only shoot over footpaths if you have permission to drop shot over the land on the other side – to fire a pellet onto land over which you have no authority is 'constructive trespass'. It's a basic safety precaution not to shoot into cover (hedges or foliage) where you cannot be sure what your pellet(s) will hit. It is also good practice to only shoot across footpaths where you can see approaching users from a long way off and be certain you will not cause any danger or alarm.

If you shoot from a path situated on somebody else's land, even if your shot falls on your own land, it is taken to be 'armed trespass'.



EQUIPMENT

Q How do I keep my scope clean? I'm afraid of scratching the glass.

YOUR EXPERT
MIKE MORTON

A **HOW** many times have you seen people using the scope tube as a carry handle? How many times have you seen people clean their lens by rubbing at spots of dirt with a glob of saliva and a finger? A telescopic sight is a precision instrument, and deserves to be treated with a high level of care.

Prevention is better than cure, so keep the protective lens covers in place when the scope is not in use. External lenses are coated, and should occasionally be wiped clean with a lens cloth or microfibre towel. Any obvious dirt should first be removed with a can of compressed air or a soft brush to avoid scratching the lens. Any unnecessary rubbing or the use of a coarse cloth can cause permanent damage to the lens coating.

The external surface of the scope should be kept clean too. You can use a silicone-impregnated cleaning cloth to protect it against corrosion.

We contacted Hawke Optics for further advice. Technical manager Alex Jenkinson points out that rifle and scope combos should always be stored in a moisture-free environment. They should never be kept in a hot place such as the passenger compartment or car boot on a hot day: high temperatures can adversely affect the lubricants and sealants inside a scope.

Alex also warns against letting direct sunlight enter the objective or ocular lens, as physical damage may result from the concentration of the sun's rays passing through the scope and creating a burning effect.

EXPERT TIP: A GUN BAG'S NOT JUST FOR A GUN

IT'S tempting to keep it simple when you choose a gun bag – after all, it just has to protect your rifle and scope combo, right? Well, what about a tin of pellets? How about a cleaning cloth? A detachable sling? Some targets and a fold-out holder to check zero? Think about what you need to take; a gun bag with side pockets and backpack straps could be just the ticket.



With all its extra pockets, this bag can swallow pretty much anything

AIRGUN ENCYCLOPEDIA

#2 MATS

When it's time to go prone, make sure you get down, but not dirty



What are they?
Shooting mats provide a clean shooting platform to protect you, your rifle and your accessories from whatever lies beneath, whether it's a muddy field, dusty ground on a hot summer's day, or the hard concrete floor of an indoor target range.

What do they do?
The prone position is the most stable shooting position of all, because multiple points of contact with the ground mean more stability. It's also more comfortable, physically and mentally, when you shoot prone from a mat.

When should I use one?
If you're on a mobile hunt stalking rabbits, a shooting mat is going to be a hindrance rather than a help; but for most other applications a mat is a godsend, even if it's just for prone plinking in your garden.

What should I look for?
Mats are usually a fold-up concertina-style and come in a range of thicknesses. While thicker mats offer the best protection over uneven or stony ground, a lighter mat may be a better option if you need to carry it a fair way to your range or an airgun quarry ambush site.

How do I use one?
Most mats will come with a section of grippy material at the front. This is where you place your elbows, not the feet of your bipod.

Assume the prone position and get a friend to look at how you're lying. You may be directly behind your rifle, but many people lie at a slight angle. If so, position the mat accordingly.



TARGET SHOOTING

Q My daughter has said she wants to try Target Sprint. I think it involves air rifle shooting?

YOUR EXPERT
ANDY MCGARTY

A **TARGET** Sprint is an exciting new sport that combines running with air rifle shooting. Imagine biathlon without the skis or the need to carry your rifle.

Each competitor runs 400m, followed by the challenge of hitting five knock-down targets using just 15 pellets. This is repeated and then finishes with a last 400m dash to the line. It is a true test of both athleticism and marksmanship.

The rifles are standardised here by using Air Arms' S400 multi-purpose rifle, and is shot at a distance of 10 metres with the targets being five 50mm discs. The rifles are .177 with peep target sights and adjusted under 6ft lbs. They tend to be shorter, to fit younger shooters. An optional metal butt hook can be fitted to extend length of pull.



Competitors are split into different categories based on age. Youth is 11 to 15; Junior is 16 to 20; and Senior is 21 and over.

In 2017 seven regional qualifiers were held, with winners going through to the final at Yate Outdoor Sports Complex on 9 September. There is a Target Sprint Masterclass the previous evening, aimed at both participants and organisers.

Events in the UK are promoted and run by British Shooting. Former Commonwealth medal-winner and Olympic pistol shooter Gorgs Geikie is the national events and commercial coordinator.

"Target Sprint is a new event, and provides something different, fun and welcoming to all," she says. "This multi-sport culture is what got me on the road to the Olympics, and you never know – there could be a future Olympian in our fold!"

Team GB sent Junior Men's and Junior Women's teams to 2017's Target Spring World Championships in Germany.

For more information, visit **www.targetsprint.co.uk**

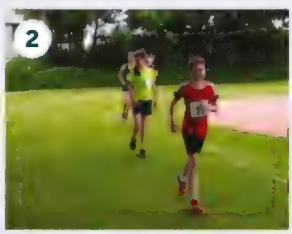
HOW TO: RUN AND SHOOT

IT might sound easy, but alternating running and shooting is harder than it seems. These tips will help...



PACE YOURSELF

Start to slow down for the last 50 metres and walk the last bit to help with your heartbeat recovery before you start shooting. Remember that competition safety protocols do not allow running on the firing point when entering or leaving.



CONTROL YOUR BREATHING

Try to control your breathing to make it regular, and hold on breath out, not breath in, as you will be less tense. Pay close attention to how the sights rise and fall between heartbeats, and shoot when you judge they will be on target.



TRAIN HARD, COMPETE EASY

You can train at your range, or at home if you are dry-firing. If you don't have access to a track, then a few jumping jacks will get your heartbeat up and allow you to shoot under simulated conditions.





SKILLS

How will hot weather affect my airgun shooting?



YOUR EXPERT
SIMON EVERETT

THE summer brings its own set of problems for airgun shooters. Or instead of "problems", I should say "situations in need of a solution". There are various ways that hot weather will affect your shooting, and it is as well to be aware of them beforehand.

The rise in temperature has consequences for you, your rifle, your ability to aim and ultimately, for the hunter, in how well your harvested meat keeps. But there are ways to either avoid or work around these problems. The most important link in the chain is you, so we shall cover the personal aspects first. Regardless of how good your rifle outfit is, unless you are comfortable you will not be able to use it to any degree of competency. Overheating can be a danger when you're out in searing heat, causing heatstroke, which can be serious in extremis. Even just normal overheating will cause your breathing and heart rate to increase, which will reduce your effectiveness. Nobody can shoot at their best while sweat is running into their eyes, or if they're panting from the heat.

"THERE ARE VARIOUS WAYS THAT HOT WEATHER WILL AFFECT YOUR SHOOTING"

For the outdoor target shooter, having a steady heartbeat and breathing pattern is essential. For the hunter, staying covered up to avoid the flash of flesh is just as vital, again without turning yourself into a boiler. The easiest measure is to simply stay in the shade. A sensible choice of clothing, with light, well-ventilated outer layers is the way to go. Daft as it sounds, a wide-brimmed hat will also help, especially if you wet the crown: the evaporation of the water will cool you, while the brim will help keep your face in the shade.

Dehydration is a distinct possibility. If you feel thirsty, you are already 10% down and need to drink water to maintain concentration and sharpness, and to keep headaches at



bay. Take at least a litre of fluid with you. A flask will keep squash cool. Avoid sugar-laden drinks, as they will accelerate dehydration: plain water or sugar-free squash is far better.

High temperatures will also affect how some rifles perform. Normal spring-powered rifles alter little because they use ambient air, but those rifles which use captive pressure (gas-ram and PCP actions) can alter in output due to the temperature affecting the pressure. Different rifles behave differently, so you'll need to check yours to see how much change there is in velocity. You may need to adjust your zero accordingly to shoot accurately.

Have you ever noticed when out in the heat that the ground seems to shimmer, especially on a piece of higher ground, a rise or a hump? This is caused through the heat rising from the ground. If your target is the other side and you have to shoot through it, how do you know if you're aiming in the right place? The shimmer is constantly changing refraction, so your target is not actually where it appears to be.

The first stage in combating a haze-induced miss is to recognise that it is there in the first place. It will be more apparent low to the ground, so to combat it, get on your feet and shoot over the top of it. The angle of view alters how much effect it has, so lying prone on a similar level is the very worst thing to do. These atmospheric distortions are amplified by magnification too, so turning your scope down to about 6x will help a lot.

Finally, hot weather will very quickly cause your shot quarry to deteriorate. Flies are present all year round, but they are more active in warm weather and will home in on any blood within minutes, so you need to take care of your harvested rabbits quickly. Thumb the bladder and paunch any rabbits as soon as they are shot. I use muslin bags to put them in, this allows them to cool while creating a barrier that keeps flies off.

A cool box with freezer blocks is an excellent way of keeping the meat in good condition, provided you are not having to carry it too far. You can always leave it in a nice shady spot, rather than your car, which will be like an oven. Failing that, keep your shot quarry out of the sun and just cover it with a thin cloth; cheesecloth is ideal because it's lightweight.

EQUIPMENT

Q What's the difference between pre-charged pneumatics and SSP pneumatics?



YOUR EXPERT
JONATHAN YOUNG

A **SSP** (Single Stroke Pneumatic) airguns are pneumatics that were very popular in the 1980s and 90s and are still used today, at least by some people. They rely on compressed air to power each shot, just as with PCPs, but they are single-shot only, as they have no internal reservoir to store air. Today's multi-pellet-popping PCPs seem to rule, but there will always be room for accurate single-shot guns.

Looking back, these SSPs were developed from multi-pump airguns where you had to repeatedly pump up to fill the valve just enough to give a full-power shot. The SSP gets there with only one pump. Think about it for a moment – a full-power hunting air rifle that charges without any dive bottles, gauges or hoses! That was revolutionary for the time – and it still is.

Superbly made, some SSPs were admittedly heavy and some physically difficult to charge up. Compressing air in only one go needs muscles. As prices fell with pre-charged airguns, the SSP fell by the wayside. Today they're seen as being on the fringe or for collectors only, but many are still very usable. They offer the same accuracy and lack of recoil as a PCP, but without the need for all the associated PCP paraphernalia.

"THINK ABOUT IT – A FULL-POWER HUNTING AIR RIFLE THAT CHARGES WITHOUT ANY DIVE BOTTLES, GAUGES OR HOSES!"







EQUIPMENT

I use a knife for gutting rabbits. How do I keep it oiled?



YOUR EXPERT
MIKE MORTON

THE answer depends on whether or not your knife is a folder, and what type of steel it's made from. In theory, a stainless steel fixed-bladed knife doesn't need oiling at all; not all stainless steel is truly stainless, however, so a thin coating of oil is still a very good idea. Many knives are made of carbon steel, which makes them easier to sharpen and helps them hold a better edge. Knives with carbon steel blades definitely need to be regularly oiled to protect the metal from moisture, sweat and blood.

If you are using a knife for any kind of food preparation – and that includes paunching, skinning and butchering shot quarry – then you can get food-safe plant-based knife oils like Japanese camellia oil. Some people use olive oil – but while it will prevent rust, it can go rancid over time. Some mineral oils from a chemist's shop are also suitable if they are labelled as being food-safe. Of course, you may not be too bothered about the chance of eating minuscule amounts of petroleum oil, in which case any gun-friendly oil will do the job.

If you have a folding knife, you'll need to oil the hinge and locking mechanism too. Whatever oil you decide to use to protect the blade will certainly work in these areas as well; but my preference is Daiwa reel oil, a very light oil that penetrates the hinge and provides maximum lubrication. It's readily available on eBay, and a bottle will last for years if used in moderation.



Some basic oils can preserve your knife for many years to come

AIRGUN ENCYCLOPEDIA

#3 BEAN BAG

Whether you're in the field or at the range, beanz meanz comfort



What are they?
Shooting bags provide a clean and comfortable platform to either sit or kneel on. They can also be used as somewhere to lay your rifle when it's not being used, keeping it free of mud, dust and dirt.

What do they do?
They elevate the shooter off the ground slightly, but their primary purpose is to improve comfort and stability, whether you're shooting offhand or using a set of sticks. A bean bag will also provide you with a good layer of insulation in cold weather.

When should I use one?
The obvious time to deploy a bean bag is when you're static-hunting from a hide and may have to sit still for hours. But a bag will help your shooting in competition too – contest rules permitting – and is great to use on an indoor or garden range as well.

What should I look for?
Most bags are made of Cordura, which is waterproof when new, but can start to leak over time when the fibres start to open up with use. Bean bags can come empty or filled. Make sure that you buy one that's fairly light and has a carry handle.

How do I use one?
Bean bags are perfect for sitting shots, and when taking a kneeler you can either kneel directly on the bag or tuck it under the shin bones of your kneeling leg. One tip is to slip your bag inside a new bin liner every time you use it, to keep it clean and protect it from UV damage.





A dedicated range means you can turn up and shoot

SOCIAL

What can I do if I want somewhere to shoot, but don't want to join a club?

YOUR EXPERT
ANDY McGARTY

CLUBS are not for everyone. Luckily there has been an increase in dedicated ranges where you can just turn up and shoot. Some need you to book first, but it's advisable to call first in any case to arrange your visit and ensure they have space. They will also have guns to rent, so if you are deciding what will be your first airgun, you can try a few and get some advice before spending your cash.

The only legal restriction on shooting at a range is that you must not be prohibited from handling firearms under Section 21 of the Firearms Act. Each range may have its own restrictions, so check before you visit.

Crackshot (www.crackshot.uk) is located in Newton Abbot in Devon and operates as a shop on the ground floor, with two ranges on the first floor. One is a dedicated airsoft pistol range, but the other allows you to shoot legal-limit air rifles and pistols out to 20 metres. Paper targets can be set out at any distance and easily retrieved using a pulley system. The rear wall is covered with HFT-style resettable targets and spinners. These are regularly painted so you can clearly see where you are hitting.

Other dedicated ranges worth checking out include:

- Phoenix Range, Barnsley (www.phoenixrange.co.uk) is a high-tech shooting experience with electronic target return and a live camera on your target.
- Pete's Airgun Farm, Essex (www.airgunfarm.co.uk) invites you practise with your rifle and go hunting as well.
- Rifleman Firearms, Hambridge, Somerset (www.riflemanfirearms.co.uk) includes the famous cow bell challenge at the 90-yard mark. There are 12 lanes, including two electronic targets in their own tunnel to stop the wind from ruining your day.



Electronic targets are gaining in popularity

FIND OUT MORE: SHOOTING RANGES

MORE details on how shooting ranges compare with clubs...



WHAT ELSE IS ON OFFER?

Most ranges will offer to fill your bottle or charge your rifle while you're there. Accessories, such as a range of popular pellets, may be on offer, along with rifle or pistol hire.



WHY DON'T CLUBS PROVIDE THIS SERVICE?

Home Office-approved clubs are not legally allowed to provide day membership, and you can't shoot on your first visit. Some will have guest days, however, where you are allowed to shoot as a non-member.



SHOULD I JUST JOIN A CLUB INSTEAD?

Club membership offers you a specialist facility where you can shoot in a safe environment. Plus you can meet like-minded shooters, talk about airguns and drink tea.

EQUIPMENT



Covering your face and hands enhances the effect of camouflage clothing

Nicky Brown

Q **Wearing full camouflage can be a bit of a burden during the summer. Would it make a big difference if I were to leave off my head net and gloves in hot weather?**



YOUR EXPERT
MAT MANNING

A **IT** depends on the quarry and the setting. I must admit that I do sometimes prefer to have my head uncovered when it's really warm.

That said, wearing a head net and gloves really does add the finishing touch to a full camo outfit. These simple items cover those tell-tale flashes of skin that can so easily blow your cover when pursuing sharp-eyed pests such as corvids and woodpigeon, and they shouldn't be too hot to wear if you go for lightweight options.

They also help to shield your skin from biting midges – something I really appreciate, as these irritating insects tend to be particularly active on a lot of my shoots during the summer months.



Leaving off your head net and gloves exposes tell-tale patches of skin that can spook wary quarry

"WEARING A HEADNET AND GLOVES REALLY DOES ADD THE FINISHING TOUCH TO A FULL CAMO OUTFIT"

TECHNICAL

Q **I have just bought my first PCP and am not sure what pressure to fill it to. It says SWP 300bar on the side, but a friend told me not to fill it to that pressure. How much air should I put in it?**



YOUR EXPERT
SIMON EVERETT

A **IF** the rifle in question is fitted with a regulator, you can fill to 200bar or higher if the safe working pressure permits. The regulator protects the hammer and valve from the variable high pressure in the reservoir. I say variable because your fill pressure is constantly reducing as you shoot. The prechamber is filled with air at the same pressure each shot, which is why a regulated rifle is more consistent across a wider reservoir pressure range.

If your rifle is not regulated, you have to restrict your fill pressure to something the firing system can deal with – this is likely to be significantly lower than the safe fill pressure. There are no safety issues concerning putting more air in, but the first shots will not be as accurate as those from what is termed the 'sweet sector' of your fill pressure.

For most air rifles without a regulator, the most consistent shots will come from a fill pressure of about 180bar down to about 110bar; your rifle may be safe to use from 200bar down to 90bar, but the shots you take while at either end of that pressure range are likely to be disappointing.

Every rifle is different, and you have to find your gun's own sweet sector. Use 180bar as a starting point, then try 185 to see if the rifle still shoots the same, then 190, etc. You will get to a point where the first handful of shots or so are off zero, but as the pressure goes down the shots will become more accurate. Filling beyond the sweet pressure will simply waste air and pellets.





SKILLS

I've heard people talk about shooting the box. What's that all about?



YOUR EXPERT
MIKE MORTON

SHOOTING the box is a way of checking you are holding your rifle – and hence your scope – level when shooting. You can also verify your scope is tracking correctly and evenly when adjusting the turrets for elevation and windage. The procedure is usually carried out by long-range centrefire shooters, but dialling in is steadily becoming more popular in airgun shooting too.

Set out a target at your chosen zero and shoot a pellet to verify point of aim and point of impact are dead on. Next, adjust elevation up by 20 clicks and right by 20 clicks. Aim at exactly the same point on the target and fire again. With your scope centred on the bull, this shot should have landed above and to the right. Return the scope to zero (20 clicks down and 20 clicks left), then adjust it another 20 clicks down and 20 clicks right. Shoot again – always aiming at the same spot.

Return to zero (20 clicks up and 20 clicks left), then adjust it 20 clicks down and 20 clicks left. Fire another pellet. Return to zero (20 clicks up and 20 clicks right) then adjust it again 20 clicks up and 20 clicks left. Shoot again. Return the scope to zero (20 clicks down and 20 clicks right) and take your final shot. Your target should now have six holes in it: two in the bull and one each at the four corners of your imaginary box.

I've heard my rifle can creep over the 12ft lb limit with certain pellets at certain temperatures. But I only ever use Pellet X, so is this really a problem for me?



YOUR EXPERT
MIKE MORTON

MOST air rifles these days are tested to ensure they are below the legal limit, and leave the factory around the 11ft lb mark, which compensates for muzzle energy variations in the range of pellets typically on sale in the UK.

There has long been an urban myth about airguns, especially PCPs, going over the limit if they have been in a hot car on the way to a shoot. BASC conducted tests with a range of PCPs that they had in cars for several hours with an outside temperature in the high 20s Celsius, the doors and windows shut, no ventilation, no air-con... In other words, they made the car as hot as possible and left the airguns in there for several hours. The result? The power dropped for PCPs and increased for springers; but using light, medium and heavy pellets, they still could not get any of the rifles to go above 12ft lb.



LEGAL EAGLE

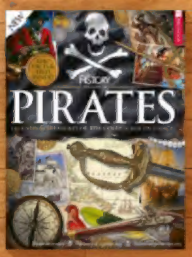
The BASC Airgun Team (www.basc.org.uk) answers your airgun shooting-related legal conundrums. Here: what if the police stop you?

If I get pulled over by the police, should I tell them I have an air rifle in the boot of my car? Would I get in trouble if they discover the rifle without me having mentioned it?

THERE is no statutory obligation to, until a constable asks to inspect your car and open the boot. The law makes no distinction between air rifles and more powerful guns for which you need a licence – they are all classed as firearms. So any offence you commit can carry a heavy penalty, and there are at least 38 different offences.







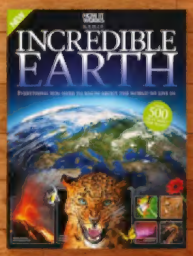












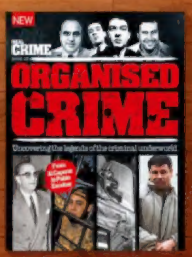


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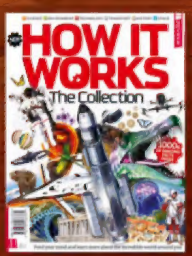




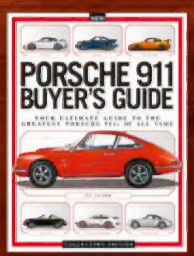












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